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JUNE 1957

Proceedings

Tenth Annual Convention

NATIONAL FEDERATION OF
FINANCIAL ANALYSTS SOCIETIES

•

May 20 to 23, 1957

•

Hotel Statler
Cleveland

Published by

THE NATIONAL FEDERATION OF FINANCIAL ANALYSTS SOCIETIES



"it's for you"

Three simple words . . .

But they mean so much, for nothing is more personal, or contributes more to your daily living than the telephone.

To a busy woman, the telephone means convenience and time saved. To a businessman, speed and efficiency.

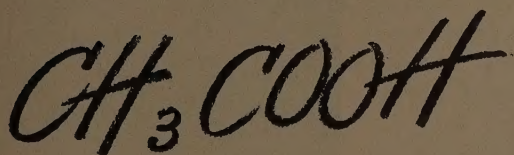
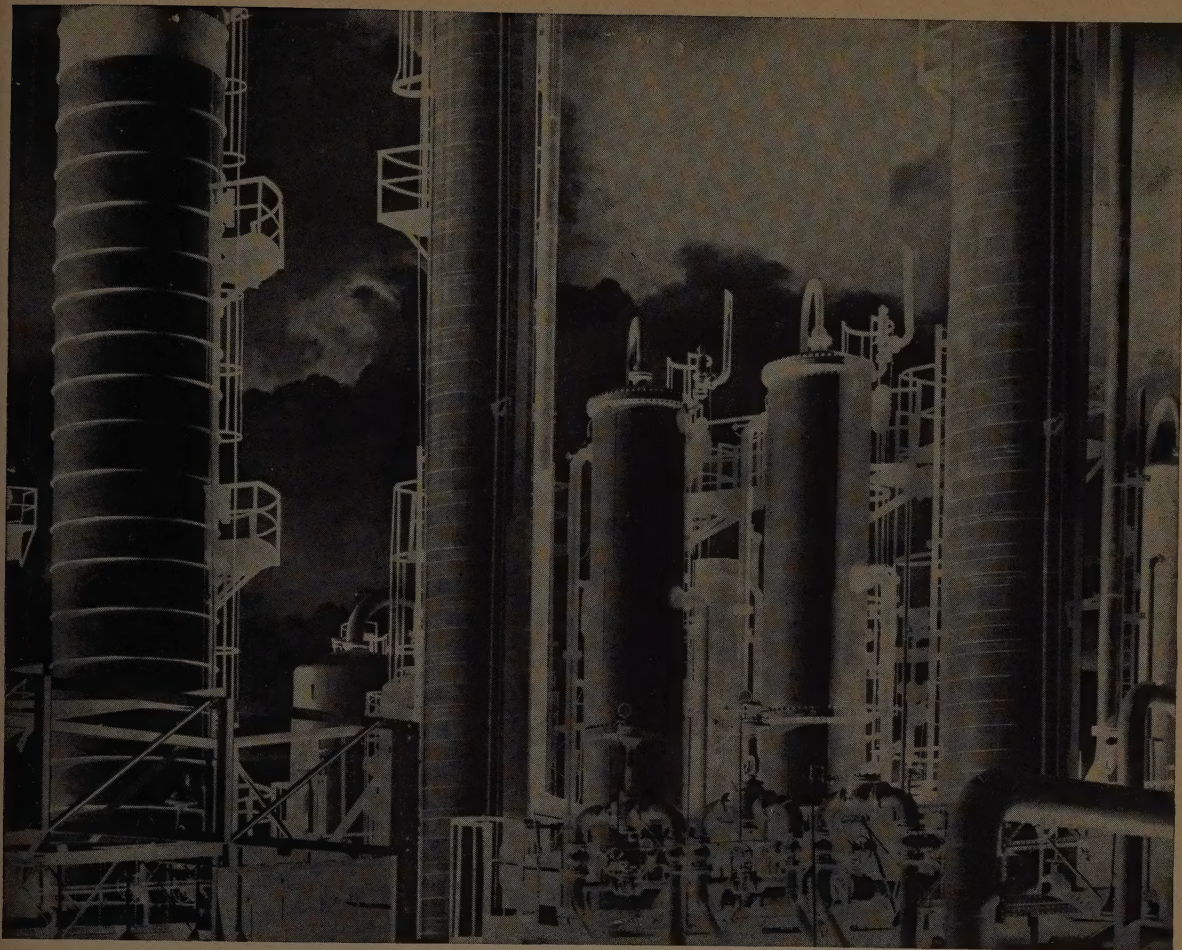
Wherever you are, whatever you do, your telephone adds immeasurably to the pleasure and business of living. Use it more.

One phone to a home is no longer enough. One of the handiest places for an additional telephone is the kitchen . . . the most popular kind is a wall type in gay color.



GENERAL TELEPHONE SYSTEM

ONE OF AMERICA'S GREAT COMMUNICATIONS SYSTEMS • 260 MADISON AVENUE, NEW YORK, N. Y.



formula for progress

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It is the formula for acetic acid, basic building block in the production of acetate fibers and plastics—and the cornerstone of Celanese' burgeoning chemical division.

Foresighted Celanese founders in 1921 de-

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CHEMICALS • PLASTICS • CHEMICAL FIBERS AND YARNS • CELLULOSE



How Thompson TV system speeds up rail ticket buying

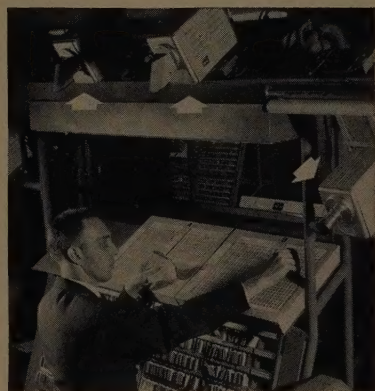
Pennsylvania Station, one of the world's largest, uses 105 DAGE TV Cameras, 100 Receivers, to speed service.

BECAUSE of a revolutionary system that uses closed-circuit television from Thompson Products' DAGE Television Division, rail ticket buying at New York's Pennsylvania Station is speeded up. Telephone reservations are speeded up, too!

Now the passenger simply tells the clerk where and when he wants to go. The clerk dials a number and a space availability chart appears on a DAGE television receiver seen by passenger and clerk. (See photo above.) The passenger selects the space desired... and the clerk dials again. Then

another clerk, called a "coupon clerk", uses an electronic machine to reproduce the coupon for the space at the ticket counter. The transaction is completed. Telephone reservations are handled in much the same way at the station.

Closed-circuit television is one result of Thompson's diversified research and development that has produced many important new products for America's leading industries. Thompson Products, Inc., General Offices, Cleveland 17, Ohio.



This Pennsylvania Railroad employee, known as a "coupon clerk", keeps availability charts up to the second under the eyes of some of the 105 DAGE closed-circuit TV cameras. These cameras transmit information to ticket counters and to telephone reservation operators.

You can count on

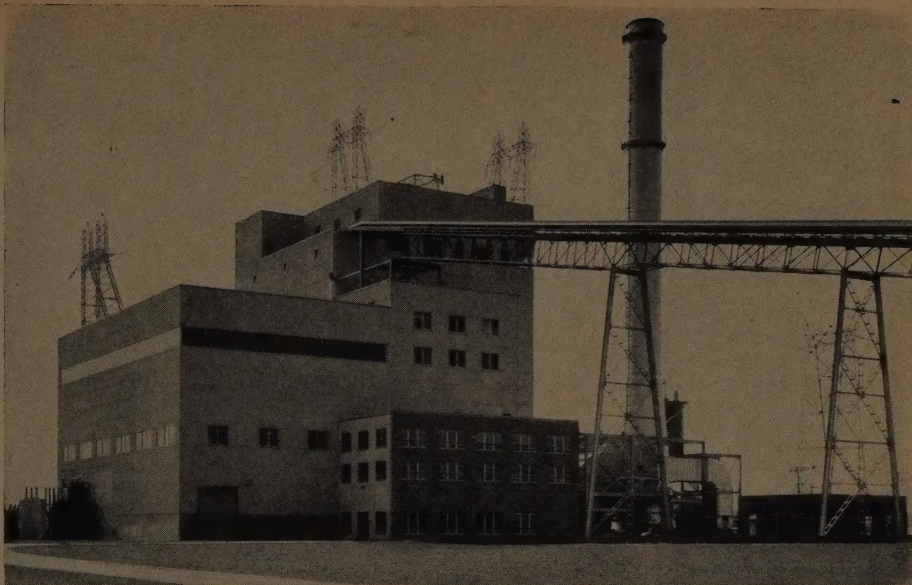


Thompson Products

MANUFACTURERS OF AUTOMOTIVE, AIRCRAFT, INDUSTRIAL AND ELECTRONIC PRODUCTS. FACTORIES IN EIGHTEEN CITIES.



This is a small part of the world's largest installation of closed circuit television. DAGE television receivers, in the center of the photo are used by telephone reservation operators.



Herbert A. Wagner Station, new addition to BG&E generating facilities which now total 955,500 kw, went into service in 1956. A second 125,000 kw unit, under construction, is to be completed in 1959.

GROWTH . . . AT BALTIMORE

ELECTRIC SALES

(Kilowatt-hours)

have doubled approximately every ten years, on the average, over the past 40 years.

•

GAS SALES

(Cubic Feet)

increased almost eightfold from 1910 to 1950, when natural gas was introduced, and have more than doubled since 1950.

•

Dividends Paid on the Common Stock without Interruption or Reduction since 1910.

BALTIMORE, ranking sixth in size among the cities of the Nation, is the center of an area which . . .

- *is increasing in population about 40% faster than the country as a whole,*
- *has an unusually high degree of stability due to a broad diversification of industry and commerce,*
- *is strategically located with respect to markets, manpower and materials. Through Baltimore's Port, America's second largest in foreign trade tonnage, flow a wide range of raw materials for manufacture, and finished products for domestic and overseas markets.*

CONTINUED LARGE GROWTH in the use of the Company's services is indicated for the foreseeable future, and is considered by the Company to be one of its major characteristics. Construction expenditures for new facilities to meet expected growth are now estimated at \$233,000,000 for the 1957-1961 period . . . a 50% expansion of utility plant in these five years.

BALTIMORE GAS AND ELECTRIC COMPANY



PLANES THAT OUTPACE THE SUN...

Like Joshua, America's newest jets make the sun stand still... fly at speeds that "set back the clock"... "arrive before they start."

But such success breeds ever greater problems. For example, fuels and lubricants are whisked from tropic heat to frigid stratosphere. Fiery jets and sensitive controls

demand far different lubricants. That's why years ago Texaco built the largest privately-financed jet fuel testing laboratory in America.

Texaco's forward-looking research meets every challenge to maintain the finest in petroleum products.

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The Analysts Journal

JUNE
1957

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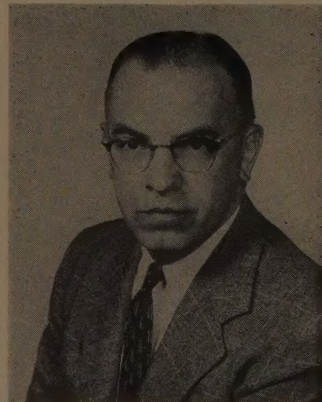
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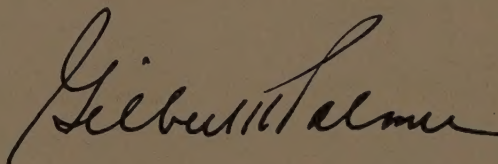
As these words are written a good number of Clevelanders are recovering from the whirl and swirl, the work and the fun involved in putting on our Tenth Annual Convention. Many of you have told us it was well done. We hope the abundance of data and knowledge made available to you will leave memories of time well spent. For persons unable to attend, the Convention issue of the ANALYSTS JOURNAL will have a fairly complete coverage.

Each year the Societies are becoming more conscious of their high purpose and rightful place in financial affairs. The Seminar has brought scholarly discussions to a large portion of those interested. The JOURNAL has endeavored to present ideas and enlightenment. The committees on Corporate Information, Government Relations, and Education have contributed much towards putting our activities on a high plane, and of course our long-range recognition as a profession has its focal point in the Professional Ethics and Standards Committee. That we are moving in the right direction is certain. And as your president next year I shall add my efforts to these endeavors.

It will be difficult to be as skilled as were our past presidents. Outstanding in his achievements is our retiring president, Robert Wilkes. His selfless, constant labors contributed enduring benefits to us all, and it is a particular privilege to be chosen to follow him. May I ask your cooperation and support in our undertakings, so that the coming year will bring progress and success to the entire membership?



GILBERT H. PALMER



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Editor
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National Federation of Financial Analysts Societies

MAY 20-23, 1957

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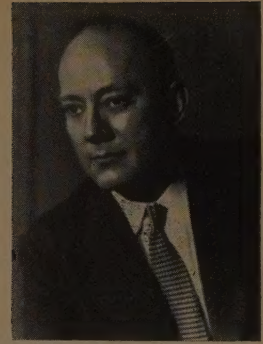
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The Proceedings of the Tenth Annual Convention of the National Federation of Financial Analysts Societies, held at Cleveland on May 20, 21, 22 and 23, is tremendously useful to all persons interested in finance and economic development. It includes virtually all papers and descriptions of field trips. Some are by choice of the authors not printed; others were not sent to us, and a very few have appeared elsewhere. This issue presents a wide coverage, and is, we think, of great importance.

THE EDITORS

THE ANALYSTS JOURNAL



Natural gas feeds industry's fabulous flame

In the Heartland of American industry, natural gas finds literally thousands of different industrial applications—because natural gas can do so much that other fuels cannot do.

It is an industrial fuel, a *precision tool* and a raw material—and new, specialized uses for it are continually being developed for the manufacturing, fabricating and processing plants of this growing dynamic region.

In the part of the Heartland served by Columbia Gas System—in Ohio, Pennsylvania, West Virginia, Kentucky, Virginia, Maryland and southern New York—the consump-

tion of natural gas by industry has more than doubled since 1946. By 1961, the estimated annual natural gas needs of the steel manufacturing and fabricating mills, the glass and ceramics works, the machinery and appliance factories and a score of other endeavors will more than triple the 1946 volume.

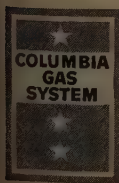
Columbia Gas System companies are planning and building now to meet these future requirements—to provide the gas supplies and the facilities to feed the fabulous flame that grows and grows in America's industrial Heartland.

THE COLUMBIA GAS SYSTEM, INC.

COLUMBIA GAS SYSTEM SERVICE CORPORATION

120 East 41st Street, New York 17, N.Y.

CHARLESTON GROUP: United Fuel Gas Company, Amere Gas Utilities Company, Atlantic Seaboard Corporation, Central Kentucky Natural Gas Company, Virginia Gas Distribution Corporation, Kentucky Gas Transmission Corporation
COLUMBUS GROUP: The Ohio Fuel Gas Company... **PITTSBURGH GROUP:** The Manufacturers Light and Heat Company, Columbia Gas of New York, Inc., Cumberland and Allegheny Gas Company, Home Gas Company





The Telephone Waveguide is one of the many new things that will help to give you better, faster service. We expect a pair of these specially designed tubes may be capable of transmitting electrical waves vibrating up to 70,000 million times a second and may carry as many as 400,000 telephone conversations or hundreds of TV pictures at one time.

The Future Holds Great Promise

There is far-reaching growth ahead for the telephone business, with many new things for telephone users.

Telephone growth has been tremendous in recent years. And there is much more to come.

Since 1940 the number of households in the United States has increased about one-third. But here's a significant fact. The number of households with telephones has increased over two-and-a-half times!

The future increase in population alone will bring new growth to the telephone business. But there will also be a greater use of the telephone and more telephones around the house. This will be accelerated by new services and equipment for every need and location.

An important part of our service in the not too distant future will be a wider range of telephones from which our customers can choose. They will be of varied sizes, styles and colors for the particular needs of the living room, bedroom, kitchen, recreation room, etc.

Recent major developments in new and improved service give promise of much future growth.

The inauguration of service on the underseas cables to Great Britain and to Alaska has already brought large increases in traffic. Another cable system is under construction from the United States to Hawaii.

The coming years will also see a great increase in the use of Bell System lines for data transmission. Another new and growing field is the transmission of special TV programs over closed circuits to theaters, hospitals, branch offices, etc.

Each new development means not only better service for the public and business but broader opportunities for the telephone company. As we make our services more convenient and valuable, we also increase their use by more and more people.

Working together to bring people together
BELL TELEPHONE SYSTEM



OPENING MEETING

Welcome to Cleveland

GILBERT H. PALMER
Convention Chairman

LADIES AND GENTLEMEN, this is the opening meeting of the Tenth Annual Convention of the National Federation of Financial Analysts Societies. I speak for the Convention Committee and the entire Cleveland Society in welcoming you. We are proud to have you here. We are proud of our town and its great industry, and we are glad to have an opportunity to put it on display for you.

As you can see from the program, we plan to keep you rather busy for a few days. Your Convention Committee is going to be even busier, and I would like to ask you a favor. Please be prompt at all meetings and particularly for trip departures. Our bus schedules are very tight and allow no time for waiting.

You can see how important this is, since I have opened this meeting fifteen minutes late! We have got to improve on that. One thing that cannot help but improve is the weather, and I understand some of you are to be congratulated on getting here at all, on time or not!

I will not contribute to further delay by taking up more of your time, but please do not measure the warmth of our welcome by this brevity. Ladies and gentlemen, I give you the Chairman of this meeting, your new Executive Vice President-elect, Mr. Hartley Smith of Los Angeles.

Mr. Smith introduced Mr. Dawson, who delivered the following address.

A Crystal Ball Look at Business

JAMES M. DAWSON
Vice President and Economist, The National City Bank of Cleveland

AS ONE EXAMINES the outlook for business it becomes evident that the industrial production curve has dipped slightly since the turn of the year. Does this easing represent the start of a general business recession, or, is it a temporary lull to be followed by another advance into new high ground?

The pessimistic viewpoint is supported by some forecasting tools. For example, those who believe there is a rhythm to the ebb and flow of the economy will remind us that from a timing standpoint a recession is overdue. Historically, the average length of time to get from the trough of a cycle to its peak has been about two years—and two years were up in mid-1956.

Those who lean on momentum or diffusion techniques say that the overall economy usually is going up or going down. It ordinarily does not stay level for long periods of time. Inasmuch as the economy obviously has lost its upward momentum, the reasoning goes that the next important move must be down.

Then there are barometers or leading indicators such as those developed by the National Bureau of Economic Research. A majority of the barometers have been pointing in the wrong direction during recent months. Therefore those who consider them the most reliable clues to the coming trend of the economy are feeling pretty bearish.

Probably the most widely used forecasting method is the spending or gross national product approach. Most users of this technique are happy fellows these days. They think that the odds favor a pattern in which the current lull will be followed by another advance into new high ground, beginning later this year or surely by early 1958.

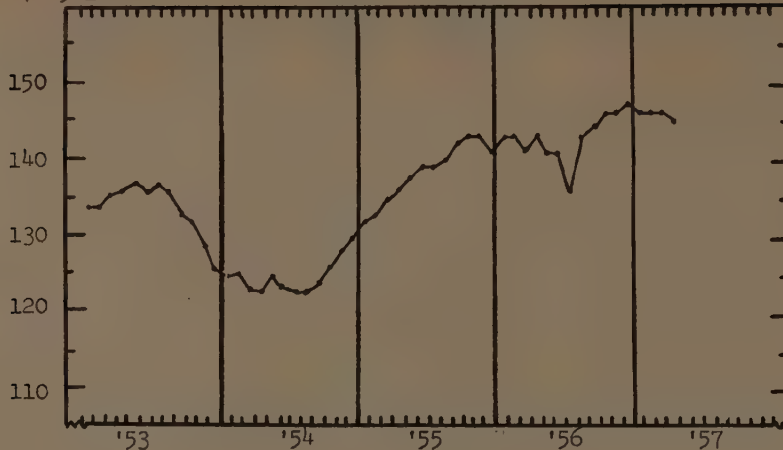
The advocate of the spending approach need not ignore the timing, momentum and barometer methods. He can concede that they have predicted correctly the current dip in industrial production. But when it comes to deciding how far down the economy will go and how long it will stay there the believer in the spending approach feels he has the more useful forecasting device.

In order to apply the spending approach to today's problem, it is helpful to comment on what happened during 1955 and 1956. Production and consumption were both in a rising trend, with consumption defined as final demand from families, from government and from capital spending by business. Production consistently exceeded consumption hence inventories rose throughout this two-year period.

At the start of 1957 business men took a hard look at their inventories and decided they were high enough. This was a fortunate decision because it was made before the overall inventory picture could become excessive. Yet it was a decision that has involved some cuts in production as

'47-49=100

INDUSTRIAL PRODUCTION



output has been brought down to the level of final consumption or demand. It is this cessation of production for inventory that accounts for the current lull or softness in the business picture.

THE OUTLOOK

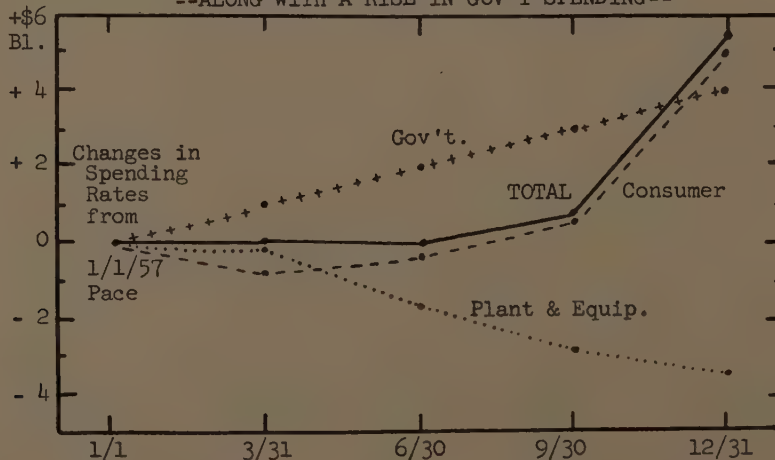
Now for the outlook. Inasmuch as production and consumption are now about in line, with overall inventories about normal relative to sales, it is logical to expect the trend of final demand to determine the future course of production. The spending approach indicates that final demand will follow a firm to moderately rising trend during the next twelve months.

It is interesting to check what happened to consumer and business demand during the recessions of 1949 and 1954. A composite picture of the two recessions shows consumer outlays for goods and services off a mere 1% at their recession low point. Spending on goods alone dropped less than 2%. However, business spending on plant and equipment declined more with the average level down 10% one year after the recessions began.

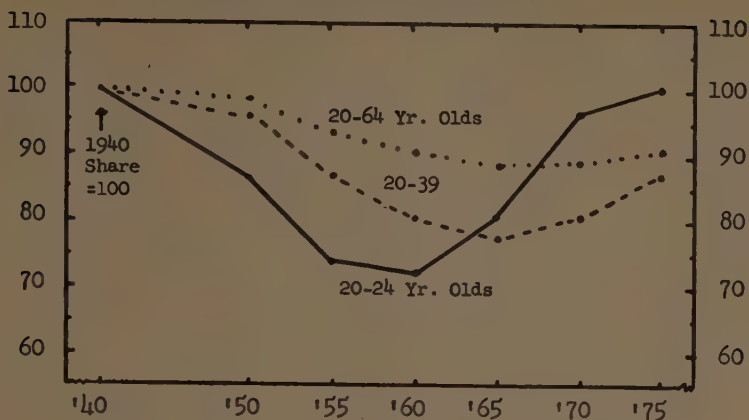
Suppose the 1949-1954 experience were duplicated in 1957, along with a probable rise in spending by government. The resulting curve for total final demand would hold about even until Fall, when a noticeable rising trend would develop. As for what actually has happened thus far in 1957, consumer demand has held almost level while government expenditures have advanced. Plant and equipment surveys suggest outlays will remain close to current high levels right through this year and into 1958.

CONSUMER DEMAND AND SCARCE LABOR

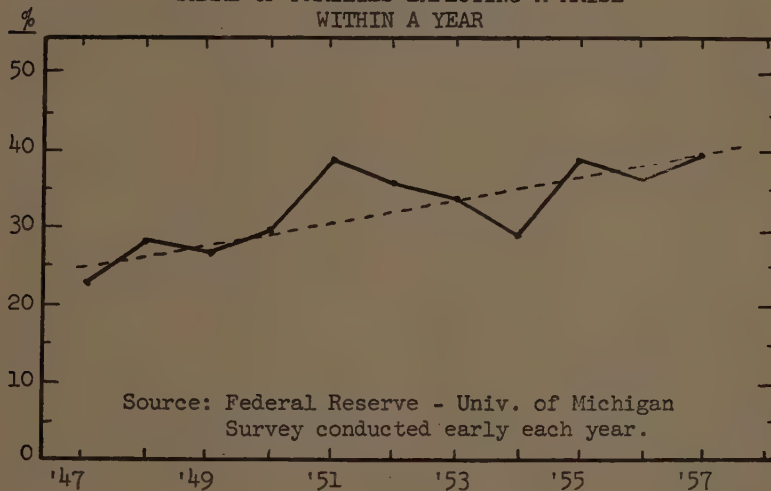
What made consumer demand hold up so well in recent recessions and for that matter in 1957? A basic reason is that we are living in an era of scarce labor. The proportion of the population that is of working age has been declining and will continue to do so for another ten years. That scarcity is a prime cause of persistent increases in wage and salary rates. It also sustains total employment because laid-off workers are quickly snapped up by employers who have been short of help. The end result is a strong trend of personal income and final consumer demand.

 APPLYING THE '49-'54 PATTERN TO '57
 --ALONG WITH A RISE IN GOV'T SPENDING--


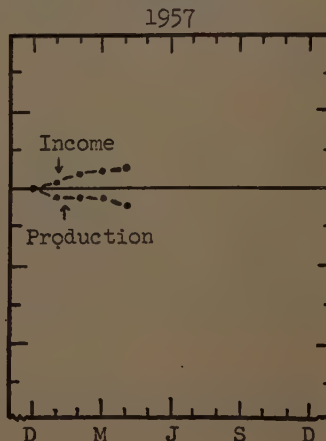
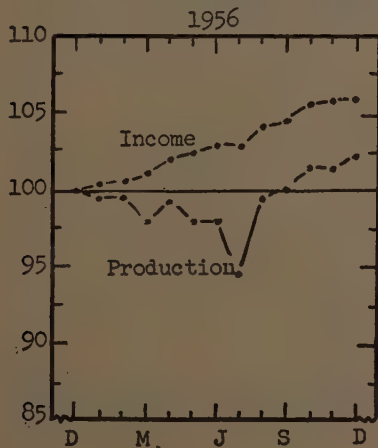
WORKING AGE GROUPS AS A SHARE OF THE TOTAL POPULATION



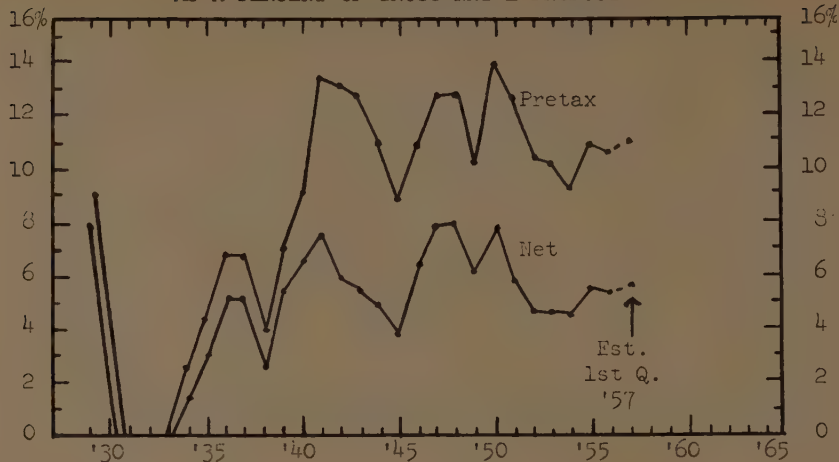
SHARE OF FAMILIES EXPECTING A RAISE WITHIN A YEAR



TOTAL PERSONAL INCOME VS. INDUSTRIAL PRODUCTION



CORPORATE EARNINGS AS A PERCENT OF GROSS NAT'L PRODUCT



The Federal Reserve-University of Michigan annual surveys of consumer intentions include an interesting question on pay increases. It seems that 40% of the nation's 50 million spending units are expecting a monetary advance this year. That is the highest percentage to entertain such a hope in the postwar period. There appears to be a gradual increase in the proportion of families who consider a raise a sure thing and in the past their expectations have, for the most part, been fulfilled.

PAY INCREASES

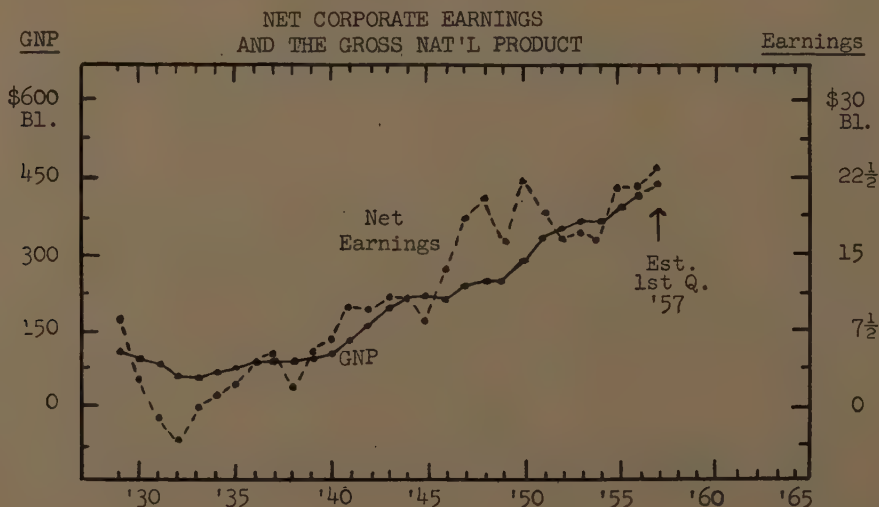
What are the implications of these "guaranteed annual pay increases" and the rather solid picture on total employment? Longer run, it is creating a demand for the fruits of improved productivity. Theoretically, that demand also could be forthcoming through declining prices along with stable wages—but unfortunately that is not to be. In fact, most economists expect wages and salaries to rise faster than productivity, thereby forcing an average 1 to 2% per

year rise in the price level. Shorter run, it means a bolstering of total personal income and of consumer demand during a year like 1956, in which the production curve shows signs of faltering. It is noteworthy that 1957 has begun much like 1956.

If the trend of business does follow the favorable pattern suggested by this discussion, what are the implications for corporate profits? The odds would seem to favor a new high during 1957 in both earnings and dividends.

You are aware that there has been much wringing of hands in recent years over "the squeeze on profits." The worrying has been justified in the case of some industries and some companies. But over all, industry has maintained net earnings very well, holding them to the historical average of around 5% of the gross national product. Business still manages to make a nickel on a dollar of sales.

Net profits of all corporations came to 5.4% of the gross national product in 1955 and 5.2% last year. The rate in



last year's final quarter moved back up to 5.4% and apparently that level was maintained in this year's first quarter. Those ratios bettered the ones reported for 1952-53-54 and matched those achieved in "normal" prewar years such as 1936-37-39. They did fall short of the 1929 level and early postwar years when buyer resistance was at a minimum and taxes were lower.

Economic Benefits of the St. Lawrence Seaway

RALPH M. BESSE, *Executive Vice President,*
Cleveland Electric Illuminating Company

THE EXPORT AND IMPORT TONNAGE now moving through the port of Cleveland is "peanuts." In fact, all the Great Lakes ports combined handle only 535,000 short tons in overseas commerce annually. Compare this with the 19,000,000 tons handled by Baltimore, the 35,000,000 tons handled by the port of New York, the 32,000,000 tons handled by the Delaware River ports, and the 10,000,000 tons handled by New Orleans. Overseas trade on the Great Lakes has been growing rapidly, but it is still quite small.

It is so small, in fact, that you may not have heard very much about it. But today there are ocean-going vessels on the Great Lakes. These small vessels carry about 1,700 tons payload on each trip. This enables them to navigate the shallow 14-foot channels of the present St. Lawrence waterway.

Although the tonnage they carry is small, it has been growing very rapidly. Overseas business handled through the port of Cleveland has increased by more than 1,000% since the end of World War II. The nation's overseas trade grew only 82%. The same trade from the Great Lakes as a whole has increased by some 1,600% during the same decade.

I know that you are looking for changes; for changes often mean investment opportunities.

THE NEW ST. LAWRENCE SEAWAY

In this region a major change is just around the corner. In only 24 months from now it will be possible for larger, more economical vessels to sail directly into the Great Lakes. This will be accomplished by the new St. Lawrence Seaway, which is now under construction by the United States and Canada.

The Seaway project is a big one. It will cost more than a billion dollars when we include the charges for the connecting channels and the deepening of necessary harbors. The largest portion of this construction will take place in a relatively small section of the over-all waterway. This major activity will be in the 115-mile stretch of the St. Lawrence River between Ogdensburg, New York, and Montreal, Canada. Here the necessary locks will be constructed, the channels will be dredged, and dams constructed to provide

In conclusion, note the rather close relationship over the years between net earnings and the gross national product. If you are a bull on growth in the economy, i.e., expecting an average annual increase of say 3½%, which gives a doubling of volume every twenty years, past history suggests you should look for similar long-term growth in corporate earnings.

the new 27-foot-deep channel, plus the electric power generation facilities.

By using the new channel, vessels with almost twice the draft and with five to eight times the cargo capacity of the present ships can provide overseas service for the Great Lakes region. These larger vessels will be faster and will offer fundamental cost advantages.

For example, a major element of expense in ship operation is crew wages and subsistence. For a typical vessel these might amount to about \$250 per day, or about 20% of the total cost, even after subsidies. The larger vessels have about the same size crews as the smaller ones. Thus, when we increase cargo capacity by a factor of five to eight, we substantially decrease the costs involved in carrying the cargo. For example, on a 30-day passage loaded to full capacity wages and subsistence cost will decrease from \$5 per ton of payload to less than \$1 per ton.

Now the St. Lawrence Seaway has been discussed for many years, but there is still little agreement on the effects the project will have. One of the first questions asked is whether the gains in the Great Lakes region will be at the expense of the Atlantic seaboard. Will trade be diverted from Atlantic ports? Or will the Seaway generate new business without seriously affecting the ports of New York, Philadelphia, Baltimore, and so forth.

SURVEY OF THE POTENTIAL OF THE SEAWAY

The Market Research section of the Cleveland Electric Illuminating Company has just completed a survey of the total potential trade available for the Seaway from the port of Cleveland hinterland area and also from the entire Great Lakes. Copies of this study will be available to you as you leave this meeting.

This analysis indicates that although the present overseas commerce using the Great Lakes ports is small, there is actually a large movement between the Great Lakes region and overseas destinations. The figure totals some 8.8 million tons of exported manufactured goods and 16.3 million tons of imports. Most of this now moves through Atlantic and Gulf ports.

If we assume that during the seven months' shipping season on the Great Lakes 7/12 of this commerce could

be available for Seaway transport, then it seems reasonable to state that approximately 5.1 million tons of manufactured goods could be available for export. This figure excludes grain, iron ore, and all products scheduled for Canada. As for imports, the figure for the entire Great Lakes is 9.5 million tons, excluding iron ores. The data for both export and import potentials are based on a navigation season of seven months. The potentials can be larger if the needs of buyers and consumers both abroad and in this country are anticipated for a part or for the entire winter. Such stockpiling is practicable, as is indicated each year in domestic Great Lakes trade.

The total tonnage which might be diverted is thus 14.6 million tons. This looks rather formidable when taken alone. But when we compare it with the tonnage handled in eastern ports, the percentages are not so frightening. The ports along the Atlantic from Boston to Norfolk handle about 23 million tons of exports and 80 million tons of imports each year. This latter figure includes substantial amounts of ore and coal, particularly iron ore. If to these figures we add the New Orleans totals, then exports reach some 30 million tons and imports some 84 million tons. On this basis divertible exports would amount to about 17% and divertible imports about 11%. In neither case is there cause for alarm; by the time these potentials can be theoretically attained, the business of the Atlantic and Gulf ports will have increased for good reasons.

FREIGHT FOR THE SEAWAY

The optimism regarding the Seaway might well be based primarily on the increasing interest of Midwestern manufacturers in overseas markets and overseas sources of materials. If this does occur, then there will be a large amount of new freight which will in part find its outlet through eastern ports and will use rail and truck transport to reach these ports. The seaboard may actually look forward to a sharing of the benefits yielded by the St. Lawrence Seaway. The increasingly bottleneck character of the East will be relieved, contributing to greater efficiency in freight handling without incurring damage to the population. The business world certainly has learned by now that competition is the life of trade.

But this increased interest in overseas trade among Midwestern businessmen is only a part of the benefits which the St. Lawrence Seaway should bring to this area. To pinpoint another major effect, we must consider the type of region which surrounds the Great Lakes. It is predominantly a metal producing and metal working economy. It is an economy built on steel produced by joining iron ore from the Messabi Range with coal from fields along the Ohio River.

It started with steel, but it kept going. Today the best market for almost anything you might name is a kidney-shaped region running along the southern edge of the Great Lakes from western Illinois to New England. It contains only 10% of the country's land area, but here you will find 43% of the United States population, and they have an average annual effective buying income of \$6,500 per family. In this area is located two-thirds of our nation's man-

ufacturing as measured by value added by manufacture statistics.

It is a tremendous market and it is growing. An even larger portion of United States population and production is in this area now than it was ten years ago. It is growing faster than our nation as a whole.

The 1954 Census of Manufacturers revealed that Ohio for the first time has now become the second state in the Union in manufacturing, having passed both Pennsylvania and Illinois since 1947. Within ten years Ohio should be first.

NEW JOBS BY EXPANDED PLANTS

Those of us in the power business know about this growth. Since World War II industries have spent more than \$2.6 billion for new or expanded plants in the area served by the Cleveland Electric Illuminating Company. One hundred and seventy-five thousand new jobs have been created. Population has increased 24%. Our own electric power sales trace this growth. During the decade residential kwh load increased 185%, general commercial grew 66% and large commercial and industrial kwh sales gained 113%.

The growth has been diversified. Northern Ohio has become the center for automotive growth. Twenty-two completely new plants, totaling more than 450 acres under roof, have been built here since World War II. In just northeast Ohio \$700 million has been spent on automotive plants and equipment.

Almost this same dollar figure has been spent by the chemical industry. Those of you who take the CEI tour on Wednesday will see a short film describing the chemical interchange at Painesville and Ashtabula. Here sixteen different plants exchange by rail, truck, and pipeline their products, by-products, and raw materials. It is one of the most interesting production inter-relationships in the world.

ASHTABULA A FAMOUS CENTER

Within the last four years Ashtabula has become a world-famous center for the production of titanium. In this small community, Electrometallurgical Division of Union Carbide and Carbon has located one of the world's largest titanium sponge plants. United States Industrial Chemicals, a division of National Distillers, has a titanium sponge plant under construction and, with Mallory-Sharon, is constructing a plant to fabricate both titanium and zirconium products. New Jersey Zinc has 68 acres adjoining. They are considering a wholly integrated titanium operation for the site.

The raw materials for titanium are available from Florida, Quebec, Norway, Africa, and Brazil. They may be brought in by the all-water route of the St. Lawrence Seaway.

The United States now imports 97.2% of our chrome ore, 91% of our cobalt, 91.6% of our beryllium ore, 95.2% of our manganese, 95.3% of nickel, 54.8% of zinc, and 75.2% of aluminum ore. We are now becoming dependent upon foreign sources of our iron ore. Iron ore imports increased from 17.7 million tons in 1954 to 34 million tons in 1956. With this increased dependence upon over-

seas sources of raw materials, particularly iron ore, we can see that the St. Lawrence Seaway will give the Great Lakes region help in its real economic base.

Since the announcement of the Seaway, the steel industry has expanded 20% in Ohio. In Cleveland, during the same period, steel expansions have totaled about 30%. This is certainly proof of the Seaway's importance to the region.

But there is another particularly attractive benefit which the Seaway may make possible. It offers an opportunity for this region to become even more diversified. New plants built on new ores will give new diversity. But the Seaway also offers us an opportunity to increase our distribution industry, to increase employment in merchandising, repackaging, warehousing, and sales activities.

The Seaway even offers us an opportunity to strengthen our present chemical and metalworking companies. This is possible by vertical integration. For example, now we have plants fabricating zinc and copper. It will now be economically feasible for refineries based on overseas zinc and copper ores to be built in this region. This will not only give new employment here, but will also provide existing industries with more economical raw materials.

SOME PROBLEMS

Before the maximum economic benefits from the Seaway can be achieved by the Midwest, several problems must be faced. The toll question is probably the most frequently mentioned one today. As passed by the Congress, the United States portion of the Seaway project must be self-liquidating over a 50-year period. This is to be accomplished by tolls on the traffic. Due to price increases and design changes during the past three years, the United States investment in our portion of the Ogdensburg to Montreal section has approximately doubled. Tolls will probably have to be increased over the original estimated. Will shippers be able or willing to pay the increased charges?

The toll schedules have not yet been established. Canadian and United States representatives are meeting on the question regularly, but a decision will probably not be made for some time. It is certain, however, that both nations will want the project utilized to the maximum possible extent. And most shippers can probably accept some increase in the tolls, although it would be difficult for them to state this now. All prices have been rising during the past three years, including most rail and truck rates.

A more difficult problem faced by the Seaway is the fact that during the winter season it will be closed for four to five months by ice. I know of no accepted solutions to this problem at this time. It will be necessary to either stockpile, as the Great Lakes trade has been doing for generations, or during the winter season other ports must be used.

ADVANTAGES OF AN ALL-WATER ROUTE

Against these problems we can balance several advantages of an all-water route. Cost is the fundamental one. The old shipping adage still holds for many cargoes, "Freight usually moves by the cheapest route rather than by the shortest route." Today the small, 1,700-ton vessels offer Midwest shippers savings of 15 to 25% on many

products bound for European and Mediterranean destinations. The number of small vessels engaged in overseas trade has more than tripled in the past six years. We can be confident that when the larger, more efficient vessels can come into the Great Lakes their costs can be 30 to 50% less than the rail-water route through Atlantic ports to Europe.

Very few figures have been published on this question of costs, but I would like to quote from a paper presented by Sydney A. Vincent, a consulting Naval architect from Newport News, Virginia. Mr. Vincent makes a detailed analysis of the costs involved in operating seagoing freighters of 400- and 440-foot lengths and 14- to 18-knot speed over the new waterway. He compares these costs with the charges for shipping by rail to east coast ports, then by water to Europe, and concludes: "The total cost via the St. Lawrence Waterway might be of the order of half the total cost via our Atlantic Coast ports."

We have yet to see the full reaction of railroads and trucking lines to the Seaway. Within the past few weeks, however, a trucking line established a special export rate from Louisville, Kentucky, to the port of Cleveland.

The transportation cost advantage will help companies now here to increase production and sell in the overseas markets. It will not, of course, be feasible for all our firms to sell overseas, but on a \$10,000 sale of Ohio goods in Europe, \$1,000 of the price might be transportation cost. Reduce this transportation cost even 30% and the extra profit on the sale amounts to \$300, or 3%.

From the point of view of those owning the freight, an important element of cost is cargo transit time. Even today, using the small 8 to 10 knot vessels, we find that Seaway shipments match most rail-Atlantic port shipments on delivery time. Following the opening of the Seaway in 1959, when larger 10 to 20 knot vessels can be used, it will not only be cheaper but it will be faster to use Great Lakes ports for shipments to European destinations.

There are other advantages that are important to individual shippers. Avoiding the breakage resulting from re-handling is one. Better control over the shipment is another. There may also be advantages in financial arrangements, as often the paper is cleared when the cargo is loaded aboard ship—and this occurs days sooner when a Great Lakes port is used.

I am sure that you will agree that there is no quick, pat statement which can be given as to the effects of the Seaway. I would summarize them this way:

Bulk commodities will almost certainly use the new waterway extensively. New industrial plants based on these bulk commodities may locate at small ports where inexpensive sites are available near the docks. This is feasible, as the bulk materials will probably move in shipload quantities, and they may be stockpiled.

Packaged goods shipments are more controversial. Here we are trying to add cases of whiskey, barrels of olives, cartons of fibre, crates of machinery, and bags of coffee beans. These products move in less than shipload quantities and will almost certainly tend to move to the major cities which are now assembly and distribution points.

We expect to get both types of commerce in our area and we expect both to grow steadily over the years.

There are then, as I see it, five general effects which the Seaway will have on this region:

1. The new waterway makes it possible not only for this region to retain its existing steel industry, but it has already given us tremendous expansions in that capacity.

2. Manufacturing firms now in this region will be able to import certain raw materials directly into their facilities located here in the center of the manufacturing belt of our country. This should give these firms a competitive advantage.

3. Plants now located to serve the central regions of the United States market can now enter the export field. New jobs for our region will be opened up as these new overseas markets become economically accessible.

4. We can expect substantial expansion in our port-related industries, such as warehousing, distribution, and packaging. This will increase the diversity of the economic base of our area.

5. Perhaps the greatest long-range effect on those regions near port cities will be the gradual establishment of new industries based upon overseas ores and other raw materials. These new industries may be paper mills or sugar refineries. They may be fertilizer plants or refineries of zinc, copper, or even petroleum. But these new operations will also increase the diversified economic base of our region.

We regard the Seaway as another major advantage of our service area—ranking alongside our central location and our unlimited water for growth. We feel that, with the Seaway, we can rephrase our slogan to: "The Best Location in the Nation Is Better Than Ever."

Railroad Tour

PIERRE R. BRETEY

Editor, The Analysts Journal

ON MONDAY, MAY 20th, some one thousand analysts assembled at the Cleveland Union Terminal to board a special train which would provide all present with a bird's eye view of Cleveland's industry. This trip was sponsored by the Cleveland Railroad Operating Committee, consisting of eight of Cleveland's principal railroads.

The special train was made up of 18 coaches provided by the Baltimore & Ohio, Erie, New York Central, New York, Chicago & St. Louis and the Pennsylvania, and a special car located in the middle of the train for use by commentators who furnished detailed information concerning various industries whose plants were seen from the train.

The route covered about 30 miles on tracks of the above railroads and in addition, the Newburgh & South Shore Railroad. About half the trip moved over tracks normally used by freight trains. Power was supplied by Baltimore & Ohio diesel locomotives.

Leaving the Cleveland Union Terminal at 11:45 a.m., the train proceeded to the Erie ore dock where a special Stouffer box lunch was provided, and where analysts viewed at close range several Hulett iron ore unloaders in operation. These machines scoop up some 17 tons of ore at one time and in less than 5 hours, unload almost 11,000 tons (average 1956 cargo) into ore cars placed in position through the efforts of electric mules.

Subsequently our route took us eastward along Lake Erie, then south on the Pennsylvania until it reached the New-

burgh & South Shore tracks at which point our route turned westward to the Cuyahoga River, thence northward, returning to the Terminal.

Principal plants seen were those of large iron and steel companies, (American Steel and Wire Division of the U. S. Steel, Republic Steel and Jones & Laughlin), several oil companies, including Standard Oil of Ohio, Shell and Texas, and such miscellaneous companies as duPont de Nemours, General Electric (lamp division), Thompson Products, Alcoa, Warner Swasey, Sherwin Williams and Ferro Corp.

Because of time limitations, a number of plants on the East side as well as on the West side, such as the new motor plants of both Ford and of Cadillac, could not be visited. Most of these plants were built in the postwar period and hence are of modern design and construction.

Analysts learned that Cleveland's rail network serves more than 3,200 producing plants. In 1956 railroads operating in Cleveland hauled into the area, 353,289 cars loaded with 13,230,632 tons of freight and hauled out 328,448 cars with 12,273,272 tons.

The analysts are greatly indebted to both the Cleveland Operating Committee and the Cleveland Society for arrangements enabling them to witness many of the city's principal industries and obtain a "feel" of the economy of the region. Our thanks go to one and all who made the trip possible.

EATON MANUFACTURING — WHITE MOTOR

This trip made possible the examination of the major plants of two companies which will participate in the future expansion of highway freight transportation, an industry having strong growth characteristics.

On arrival at the Eaton Axle plant, the largest of the company's 16 divisions and two subsidiaries, the group heard talks by John C. Virden, president, and other Eaton officials. Analysts were conducted on a tour of the plant, including the dynamometer laboratory. The company is a leading producer of automotive, aircraft and industrial parts and components, and has important interests in powdered metal and automobile air-conditioners.

After lunch, the group proceeded in buses to White Motor's main plant for a tour of the engine manufacturing operations and the production and assembly of heavy-duty trucks in which White output is concentrated. About 3 p.m. the analysts assembled for talks by Robert F. Black, chairman and other White Motor officials. White has broadened its position in the heavy-duty truck field through recent acquisitions, and has also entered the diesel engine industry.

Eaton Manufacturing Co.

JOHN C. VIRDEN

President, Eaton Manufacturing Company

WITH YOUR PERMISSION, I would like to make a few specific comments about Eaton and its future prospects. This will be followed by a question and answer period and a tour of our axle plant.

Eaton's sales and profits for the past ten years were approximately eight times the total for any decade prior to World War II. We have paid dividends every year since 1923.

I do not intend to bore you with history and statistics. I am sure all of you know a good deal about Eaton. In the envelope you have just received, you will find our 1956 annual report which contains a statistical summary of our results covering a period of years.

For the March quarter of 1957, both sales and profits declined as a result of the four-week strike at the Axle Division. Unfortunately, the axle plant shutdown occurred during one of its most active periods of the year.

For 1957 as a whole our sales and earnings should compare reasonably well with the results for 1956. The biggest problem at Eaton, as it is with every company today, is to halt the squeeze on profits resulting from rising costs. We are doing a number of things to cope with this situation, principally through our automation program and through increased operating efficiencies and economies.

Our parts sales to passenger car manufacturers this year are running moderately ahead of last year. I would like to

touch briefly on the subject of automobile production and its relationship to Eaton. The average for the past five years was just under 6,000,000 cars. When leading car producers speak of a 6,000,000-car year in 1957, they are talking about something that is slightly better than the average of the last five years. Eaton can do well in a 6,000,000-car year.

Our truck axle business continues at a high level, although somewhat below the 1956 record.

NOT DEPENDENT ON ONE PRODUCT

Since we supply many products to both truck and passenger car manufacturers we are not heavily dependent on one company or on one product, so that adversities affecting a single product or a single customer do not have too great an effect on our business.

This was demonstrated in 1956 when the high level of activity in heavy-duty trucks took up the slack in passenger car business, while our Aircraft, Foundry, Reliance, Dynamic and other divisions provided strong influences in boosting the sales volume to a record high.

In the allotted time I will try to outline the plans we have for taking advantage of what we term the growth potential of our divisions—our capital expenditures over the next year or two—the new products of our own research efforts—and our philosophy toward new acquisitions.

For the current year we will spend around \$12,000,000 for plant improvements, new equipment and expansions, or approximately the same as we spent in 1956. Additions to plants and equipment are scheduled at the Dynamatic Division in Kenosha, Wisconsin; the Stamping and Heater Divisions in Cleveland; at the Reliance Division in Massillon, Ohio; the Aircraft and Saginaw Divisions in Battle Creek and Saginaw, Michigan; and the Fredric Flader Division in North Tonawanda, New York.

We have spent more on capital improvements in each of the last three years than we had previously anticipated we would spend. Based on what we know, it is expected that 1958 expenditures will be somewhat lower than our 1957 budget. Depreciation charges at present are running around \$6,000,000 annually compared with \$5,600,000 in 1956.

Eaton as you know has 16 divisions and two subsidiaries, each of which is reviewed in the brochure "The Eaton Story" which you now have. These divisions and subsidiaries, located in 15 different cities, supply a myriad of products for automotive, aircraft and general industrial applications. We are still heavily dependent on the automotive industry, but the percentage, now between 70 and 75% if our truck business is included, is smaller than it was five years ago because of our emphasis on diversification. It will continue to be the desire and the objective of Eaton's man-

agement to make the company less dependent on the automotive business in the years ahead.

In discussing the potential we see for many of our divisions and what we are doing to obtain the maximum benefits, I would like to start with the automotive segment of the business.

AXLE DEVELOPMENTS

The Axle Division, the country's major producer of truck axles, is anticipating steady long-term growth due to a number of important factors. The expansion of our population, dispersement of industries and communities, new cross-country highways—all mean greater volume for the trucking industry and for Eaton. For the next 15 years, impetus to our sales will be given by the multi-billion-dollar Federal highway program.

We at Eaton believe we can keep ahead of the industry in technical developments involving truck axles. Our own metallurgical improvements in recent months have brought us the most satisfactory gear steel yet encountered with an accompanying 70% reduction in the use of alloy nickel. It is easy to see the advantages of economy in such a development. Gears represent a sizeable investment in an axle.

We are preparing to manufacture a new tandem axle that incorporates, for the first time, the two-speed feature in a tandem. This improvement and new developments in shifting mechanisms for our two-speed axles are expected to make tandems even more desirable to truck operators in many sections of the country. We sell more tandems than any other producer.

In Saginaw we are installing new machinery and equipment in tooling up to make hydraulic valve lifters for the Mercury for the first time, and for the new Edsel.

At the Heater Division, our forecast for the next two to three years indicates continued gains in sales. The forecast is based on what we see ahead for our air conditioning and compressor clutch business which has been augmented in 1957 by a contract from one of our large automotive customers. This year we are confident of increasing our sales of automobile air conditioners, a field we entered in 1955, by 200% over the 1956 total.

The air conditioner compressor clutches we build are used by all major automobile manufacturers, with the exception of General Motors. This clutch has had a very substantial growth in sales since 1953 when we introduced it to the trade. Last fall, Heater embarked on a 33% expansion of its plant, primarily to meet the growing demand for automobile air conditioning systems and components. This expansion will help greatly in reducing our manufacturing costs because of more efficient operations.

Among the new products being developed by our Heater Division are window lifts for the automobile trade, smaller and less expensive compressor clutches, fan drives for trucks, and plastic parts to replace steel stampings on heaters and air conditioners. The new plastic material, in our opinion, has inherent economies and is stronger than any other plastic material known to our engineers. We expect to be producing plastic parts by January 1, 1958. We are working actively with several car makers on window lifts. These units offer a tremendous potential as there are four in

each car. They can be installed either for manual or electrical operation.

SPRING DIVISION

Notwithstanding the current publicity about air suspensions, the major products of our Spring Division are not going to disappear from the car of the future. We are fully cognizant of the moves being made in the direction of air suspension, and, like the car makers themselves and the rubber companies, we too have been searching for the best suspension, working closely with the engineering staffs of various automobile companies and suspension manufacturers.

We think we have developed a good system; at least it is attracting considerable interest among our customers. This consists of a redesigned leaf spring in which we accomplish certain economies and retain the basic advantages that a leaf spring has over the air bellows. We have taken the money saved here and, at some additional cost, added a unit to compensate for the variations in load.

The advantage of this system over the straight air ride is that the car retains a flexible member between the axle and the frame, whereas with the straight air suspension rigid members must be introduced which are not now on the car, in addition to the air bellows. Cost, in the final analysis, will be the determining factor. We feel that our system has certain money saving benefits over the air suspension.

I want to emphasize also that our Spring Division has products other than leaf suspensions. We do a substantial business in mechanical coil springs of all kinds, and we feel that this business will grow. I believe we are the largest producer of coil springs used on dies in presses. In recent months the Division has brought out new products that fit into our engineering and manufacturing know-how. We have just closed a contract for certain railway parts which could develop into a major source of business for the Spring Division.

A decision to transfer the operations of the Stamping Division in the fall of 1955 to new headquarters, with a 60% per cent increase in manufacturing facilities, proved a sound one. Sales for the current year are expected to be 25% ahead of 1956 as a result of the addition of new business which the expanded facilities has permitted us to take on during the past year. Additional press, welding, plating and automatic polishing equipment are being installed to meet the heavy demand for bumper guards, bumper sections, grilles and other parts for 1958 models.

The Pump Division in Marshall, Michigan, has completed the development of a new power steering pump based on a "roll" principle which we feel has substantial manufacturing and sales advantages. It is a high-pressure pump and we expect to be building it in June.

Though not competitive with the Heater Division's air conditioning components, the Pump Division has also developed a viscous fan drive for use with automotive air conditioning systems. This drive enables the fan to retain its cooling characteristics even when the engine is idling, which has been a serious problem in the air conditioning of certain models. Several automobile manufacturers are interested in this development.

VALVE DIVISION

At our Valve Division we have been working diligently on automation of the various operations, accomplishing a marked degree of manufacturing efficiencies and economies and, at the same time, improving the quality of our product. We hope to achieve the maximum automation possible at this division within six to eight months. Our production of valves is continuing at a high level and can be readily increased as demands of customers warrant.

While on the subject of automation, I might add that for the past few years we have been introducing labor-saving machinery wherever it is feasible at our various divisions. This equipment has been and is being designed, engineered and built at our Central Research Division in Cleveland. The program is on a continuing basis.

The potential of our Canadian subsidiary, Eaton Automotive Products Limited in London, Ontario, is tied closely to the excellent business prospects in Canada in the years ahead. With a modern plant, and the addition of several new products in recent years, such as mechanical coil springs, 2-speed axle fabrication and automation heating-ventilating systems, we are optimistic about the future of this subsidiary.

Before leaving the subject of our automotive business, I want to say that the specialized experience of our research and engineering staffs at the divisions supplying this industry and at our Detroit Automotive Research Laboratory has been an extremely valuable asset in dealing with the automobile manufacturers on their own tailor-made parts and components. They rely on us greatly for assistance and we work closely with them.

Now for the non-automotive or partly automotive divisions of our business.

Our Aircraft Division, a leading supplier of compressor blades for jet engines, has been steadily expanding its output for nearly two years and the peak has not yet been reached. As a result of the increase in blade production, our company-wide aircraft sales are running in excess of 10% of total volume.

We are now producing blading under the J-75 program, while the J-57 program is continuing. Besides supplying compressor blading for the "cold-end" of jet engines as at present, the division is applying its techniques to the production of high temperature-resistant alloy parts for the "hot-end" of these engines. We are about to tool up, using our exclusive Roll-Form precision forging process, for the manufacture of turbine buckets and guide vanes for the J-75 and should be in production of both components in 1958, reaching peak output in 1959.

Although all of our present blade production is for defense requirements, we anticipate that commercial orders some day may become a significant source of additional business for us.

Through our Dynamatic Division, it is our aim to become the country's No. 1 producer of adjustable speed drives used by many industries for transmitting power. I do not mean this to be a sales pitch, but I do want to say that our eddy-current drives and the many functions they perform through electronic or magnetic amplifier controls

are the most comprehensive drives on the market. They can and do solve a larger variety of adjustable speed problems than other drives.

At present, Dynamatic is preparing to enter the field of magnetic friction clutches and brakes which we feel have a definite place in the drive field, particularly in machine tools and textile machines among other applications. Magnetic clutches are not new to Eaton, which pioneered in this field. Their advantages will open up broad new markets.

We have occupied a leading position in the dynamometer field for many years. You will see one of our dynamometers in action on your tour. We firmly believe that our Dynamatic Division will continue to be an important supplier of this test equipment for automotive, aircraft and other industries we are currently exploring.

For the Fredric Flader Division in North Tonawanda, New York, we have recently approved the construction of a new laboratory in Buffalo to replace a Government-owned laboratory in Toledo now under lease by Eaton. The Toledo facility is being turned back to the Government June 1.

The new laboratory is designed to broaden the normal business of this division in the development of new aircraft turbo jet and industrial gas turbine components and devices. We plan to utilize the talents and facilities of Flader's engineering, research and manufacturing departments for the development of more of our own products, thus opening up new profit potentials. At present this division's three basic departments are largely occupied with sub-contract work.

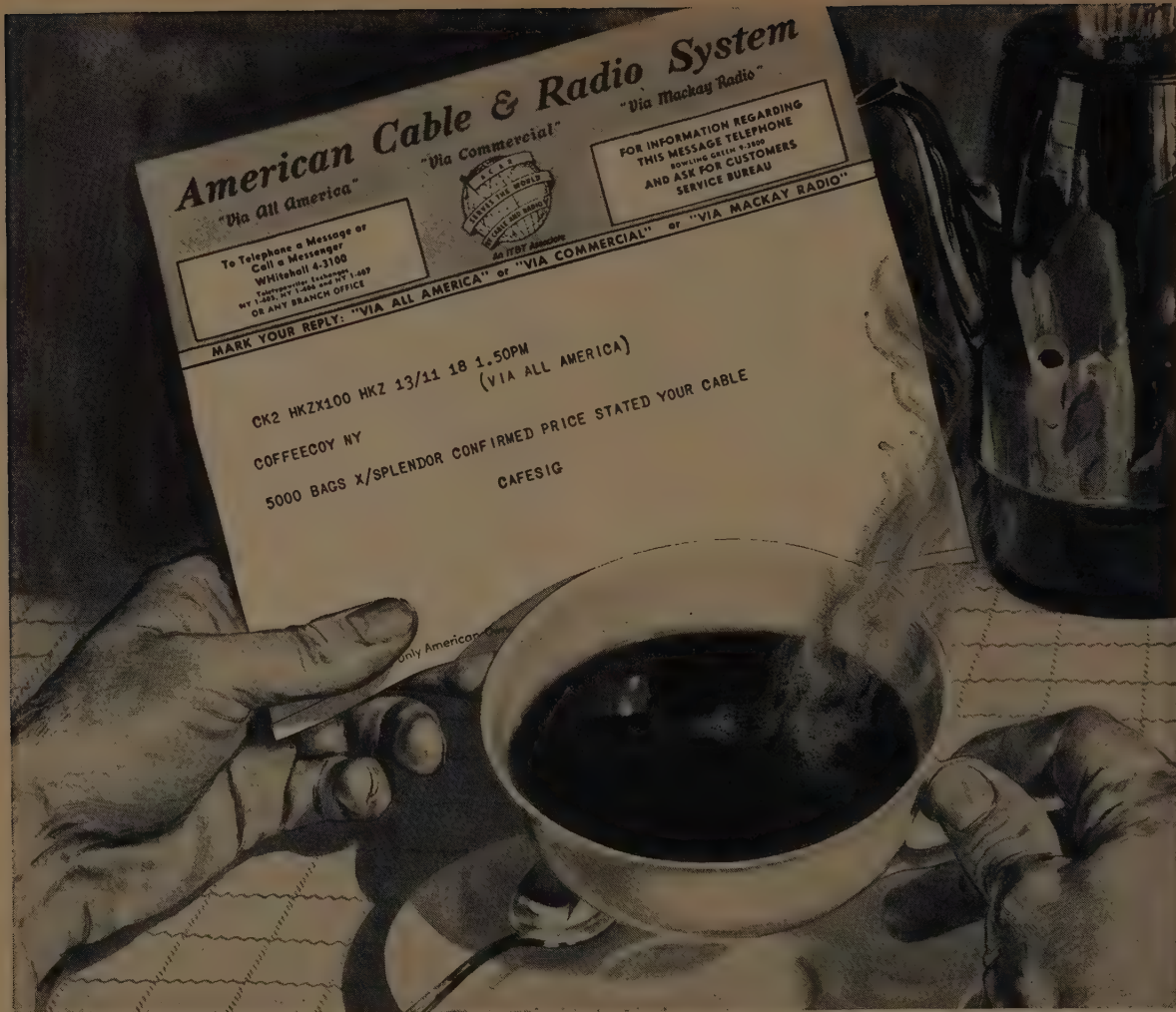
The Reliance Division is perhaps our most broadly diversified operation, both from the standpoint of products and customers. This division has just developed a new nut and spring washer assembly which we expect will substantially increase the division's sales when it attains production status. A number of other new products are in the development stages, including high temperature lock nuts which would be particularly suited for use in high speed planes, rockets or missiles.

Our Foundry Division in Vassar, Michigan, operates the largest permanent mold gray iron foundry in the world. Here we are currently designing a machine that will raise our present limitations from about 25 pounds per casting to 40 pounds. This will open up a completely new field for our castings. This division serves numerous industries, with approximately a third of its output going to the automotive industry.

A research program now going on at the Foundry Division is aimed at developing our basic permanent mold iron so that it can be hardened to successfully compete in mild steel applications. Our present sales and product effort here is to produce 40,000 tons of castings annually as compared with the current 29,000 tons.

BROAD POSSIBILITIES

The management of Eaton is ever conscious of the broad possibilities of growth and expansion from additional sound acquisitions. Our philosophy is that the company we may be considering must be a profitable business with a sound future for its products. Management is also very important to us. We are not interested in acquiring businesses just for the sake of increasing the size of our company.



It takes a lot of communication to make a good cup of coffee...

Between coffee grower, roaster and your breakfast table lie thousands of miles of ocean and mountain terrain ... and thousands of words of business transactions, market reports and shipping instructions.

The pulsing thread that "delivers" your pound of coffee is made of submarine cable, radiotelegraph, and ship-to-shore radio—networks of modern communication operated by American Cable & Radio Corporation, through the cooperation and farsightedness of our good-neighbor governments in the coffee lands.

AC&R, an associate of International Telephone and Telegraph Corporation, is the largest American-owned international telegraph system. It provides direct cable and radiotelegraph circuits linking the United States and the principal countries of Central, South America and the West Indies, Europe, Africa, the Middle and Far

East. The movements of coffee, together with other vital commodities and thousands of items in commerce are speeded by these communication "lifelines."

Since the first cables were laid ... more than three-quarters of a century ago ... AC&R has contributed to the economic growth of many lands. Through its subsidiaries, Commercial Cable Company, Mackay Radio, and All America Cables and Radio, Inc., backed by the world-wide manufacturing and research facilities of IT&T, it offers the finest in international communication services.



INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION, 67 Broad Street, New York 4, N. Y.

For further information address American Cable & Radio Corporation, 67 Broad Street, New York 4, N. Y.

GENERAL ELECTRIC — RELIANCE ELECTRIC

Analysts visited Nela Park, General Electric's famous "University of Light," involving 20 major buildings, covering all phases of the Lamp Division. They spent most of their time in the Lighting Institute—the focal point of education, technical development and research for the division. All kinds of lighting, old and new, were demonstrated and production techniques were shown by movie and by working models.

After lunch at Nela, the group moved on to the new Euclid plant of Reliance Electric and Engineering Company. The general offices are at this location, as well as manufacturing facilities for electronic and magnetic control equipment, used extensively in factory automation. The group toured these facilities with guides. President Edward E. Helm and other top management executives met with the group for a full-scale management conference.

Reliance Electric

EDWARD E. HELM

President, Reliance Electric and Engineering Company

FROM A BEGINNING IN 1905 with the manufacture and sale of a special adjustable-speed electric motor, the Reliance Electric and Engineering Company of Cleveland, Ohio, is now a company doing business at an annual rate of \$75 million. Plants in Ohio are located in Cleveland, Euclid and Ashtabula. The Reeves Pulley Company of Columbus, Indiana, is a division of Reliance, and a subsidiary company operates in Welland, Ontario. Distribution and modification plants are operated in San Francisco, California, and Elizabeth, New Jersey.

Total employment is about 4,000. The principal products are A-c. motors, D-c. motors, V*S drives, Reeves drives, gearmotors, generators, electronic controls and regulators, and mechanical equipment which, with motors, comprise complete electric drive systems.

Essentially all industries are served, some of the principal ones being machine tools, textile, steel, chemical, automation, printing, paper, aircraft, and road building, with substantial use of Reliance products in mines and on shipboard. Special motors are now being produced for nuclear energy power plants.

For the year 1957 it would be expected that the Reliance organization of today may realize a net profit of about \$5 per share on \$72-74 million of sales, there being 843,222 shares outstanding as of April 30, 1957. For the first six months of the fiscal year to that date, earnings were \$4,888,670 before taxes and \$2,161,545 after taxes.

Backlog, which was \$34,323,000 at last fiscal year-end, October 31st, has been eaten into somewhat and is now

\$29,500,000. As stated in our Semi-Annual Report, "the rate of incoming orders is holding up exceptionally well, although there is some change in the mix of products sold." We feel that incoming business may increase during the second half of the year, but do realize that a business dip might occur and that whichever way business goes, the results will to some degree be reflected in the outcome of operations at year-end.

THE FIRST FIFTY YEARS

Our first fifty years, 1905 through 1954, are considered by us to have provided Reliance's "Foundation for the Future." Dividends have been paid on the \$5 par value common shares continuously since the shares were listed on the New York Curb Exchange back in 1936, giving an uninterrupted dividend record of over 21 years.

Reliance's services to customers are world-wide. The United States and Canada are covered with sales and service branches. Foreign affiliations are maintained in Central and South America, Europe and Australia.

Reliance has a youthful organization, alert to move forward in all areas of operations. Such a group presses forward and holds on to gains as they are made. In our engineering and research work we adopt and develop new techniques to the utmost that they can be effectively and economically employed. For example, the digital computer is a tremendous help in making electrical design calculations both in great savings of time and in particularly meeting the shortage of engineers.

Product lines have recently been redesigned or are new. This results in having a high level of quality throughout and the benefit of good cost experience in production and the use of materials. These products fall into three categories—standard products, engineered drives and Atomic Power Department products, the last being the motors for nuclear power projects.

COMPANY GROWTH

Let us now discuss company growth. The company's policy is one of development through broadening its base in the electrical manufacturing field, both by expansion of plants and facilities and by merging efforts with other strong companies in the field.

In 1955, the Reeves Pulley Company of Columbus, Indiana, became an operating division of Reliance. Within the past ten days a proposed combination of the Master Electric Company of Dayton with Reliance has been approved by the directors of both companies, subject to working out the final agreement and other legal matters. Four hundred fifty thousand shares of Reliance common stock are to be exchanged for the assets of Master.

A long-range program of some \$20 million contemplates (1) appropriate expansion, improvement and modernization of manufacturing plants and facilities, (2) further product development and redesign, (3) additional marketing and distribution facilities, and (4) new engineering equipment, tooling and miscellaneous facilities.

When the merger with Master materializes, another big step will have been taken in the acquisition of manufacturing and engineering facilities, along with the addition to product lines of complementing items which will broaden the diversification of our markets and increase our services to customers. Master, which does about \$25 million a year

in sales, is a 37-year-old concern with an excellent record of efficient, profitable performance.

A RAPID INCREASE PREDICTED

Marketwise, the long-range future of the section of the electrical manufacturing industry in which we are is bound to follow closely the indices of (1) capital expenditure programs, (2) machinery purchases, and (3) installed generating capacity of electrical utilities. Predictions in these areas call for an even more rapid rate of increase over the next ten years than the amazing rate at which they increased over the last ten years.



AIRCRAFT RADIO CORPORATION

Boonton, New Jersey

Dividend No. 97

On May 3, 1957, the Directors of Aircraft Radio Corporation declared a dividend of twenty cents (20c) per share on the common stock of the Company, payable May 24, 1957, to stockholders of record at the close of business May 15, 1957.

HERBERT M. KINGSLAND
Secretary

STANDARD BRANDS

Incorporated

COMMON STOCK DIVIDEND

The Board of Directors declared a quarterly dividend of 50c per share payable on June 15th to stockholders of record on May 15, 1957.

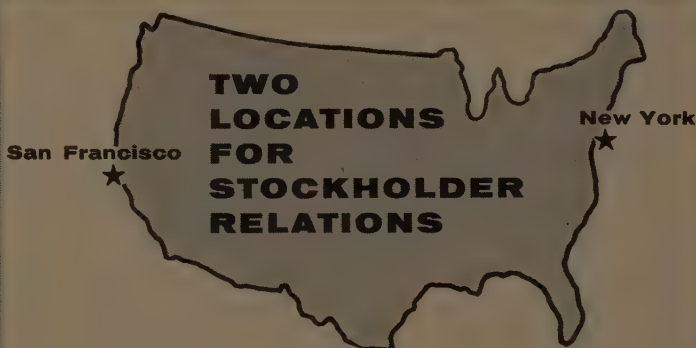
PREFERRED STOCK DIVIDEND

The Board also declared a dividend of 87½c per share payable June 15th to stockholders of record on May 31, 1957.

John B. Noone
Secretary and Treasurer

April 25, 1957

...NEW PROGRESS REPORT...



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With the expansion of our San Francisco service facilities and our move to larger quarters in New York, this organization offers you better locations than ever to handle your Stockholder Relations — both regionally and nationally. Our coast-to-coast operation brings the financial community to your door-step... especially important to groups that must go to the public frequently for capital funds.

We will be glad to explain how you could use our know-how to advantage in keeping investment bankers thinking about your company. Call or write for an appointment.

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Trip Manager
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Hayden, Miller & Co.

ADDRESSOGRAPH-MULTIGRAPH — TOWMOTOR CORP.

Because of the complexities of modern business machines, the management of Addressograph-Multigraph Corporation planned a product demonstration, with step-by-step explanations. Of great interest at this time were the new specialized high-speed electronic machines. The demonstration was followed by a guided trip through the plant—the first inspection by any analysts of the new construction which increases Addressograph's floor space by 50%. A conference followed, at which all top management was present to discuss the company's program and the outlook.

After lunch at the plant, buses proceeded to the Towmotor Corporation, the largest exclusive manufacturer of gasoline, diesel and LP-Gas powered Fork Lift Truck equipment. The visit included a full-scale management conference with President C. E. Smith and other officials.

Towmotor Corporation

C. E. SMITH,
President, Towmotor Corporation

JUST TO REFRESH YOU on a bit of Towmotor history, Towmotor was founded in 1919 by Lester Sears and his father. In 1942 the present company was incorporated—the Sears family holding all of the stock. A few years later in 1946, a public offering was made of part of the family stock plus additional authorization which brought in approximately \$1,000,000 of capital. The Sears family at this time retained about 41%. In September, 1955, the stock was split 2 for 1.

With a conservative but adequate dividend policy, earnings retained in the business supplemented by short term bank borrowings have satisfied our capital needs through our years of expansion and growth.

World War II established the importance of materials handling. Manufacturers came out of World War II very conscious of the handling problem. It became the subject of studies having to do with industrial efficiency. The result of these studies showed that the cost of moving and storing materials accounts for between 20% and 90% of the manufacturing costs of industrial products.

DIVERSIFICATION

Practically every type of industry under the sun has now become concerned with this problem and its solution. As a result, the market for material handling equipment of the type we manufacture is as broad as industry itself. There are few, if any, capital goods industries that have as wide a diversification of market as do we.

Herein lies our diversification. Of the 57 non-manufacturing industrial and commercial classifications designated

by the Bureau of the Budget, Towmotor in 1956 sold to 27 classifications. Of the 30 not sold, 10 were in banking, finance and legal categories and others such as radio and television broadcasting.

Out of 152 manufacturing classifications, we sold to 110. We did not classify our sales in the export market or the Canadian market, and after placing our domestic sales in these 110 classifications, we had left with us 3½ million unclassified—these were trucks sold to our dealers and resold but not yet classified. I am sure that when these sales have been properly catalogued, the number of classifications in which Towmotor sold its product will be nearer 120 out of 152.

We have every reason to believe that these broad markets give us greater diversification and constancy of market than most companies with a variety of product lines.

Now of course, we are not the only company in the lift truck business, but we are the only company in the business which devotes 100% of its time and energy exclusively to the development, manufacture and sale of gas, diesel and LPG powered equipment. Perhaps you men would like to know where we stand in relationship to the rest of the industry.

Accurate figures have been compiled for some time back by our Industrial Truck Association. If we eliminate the classifications in which we do not compete, we did 22% of the business in 1956.

Towmotor, last year, along with Gerlinger Carrier Company, which it acquired during the year, had a sales volume of almost \$40,000,000. I am not going to make any attempt to give you figures of our competitors. They are not available and would not be directly comparable if we had them since some of their products in certain fields are not competitive with ours, and vice versa. I mention them simply to explain what our competitive position is and to emphasize the fact that with our \$40,000,000 of sales, we have a pretty strong position in this competitive field.

I think I can say definitely that today Towmotor is the country's largest exclusive manufacturer of gasoline, diesel and liquefied petroleum gas powered fork lift trucks.

ACQUISITION OF GERLINGER CARRIER CO.

As you know, toward the end of 1956 Towmotor acquired the Gerlinger Carrier Company of Dallas, Oregon, through the exchange of 125,000 shares of Towmotor stock for all outstanding Gerlinger stock.

Towmotor had made fork lift trucks, both solid and pneumatic tired, for a wide variety of industrial purposes in capacities from 1,500 pounds to 15,000 pounds. Gerlinger, which incidentally was founded in 1919, the same year as Towmotor, had specialized upon large capacity pneumatic tired fork lift trucks and straddle type industrial carriers.

In short, Gerlinger manufactured material handling equipment which belonged, you might say, in our established field, but which went beyond ours in its ability to handle especially heavy loads for industries such as lumber, steel, concrete pipe, etc. which requires the heavy equipment. The Gerlinger line of larger equipment has capacities from 12,000 pounds to 40,000 pounds in their lift trucks, and from 12,000 pounds to 60,000 pounds in their carriers. A clear exhibit of how nicely these two lines go together and supplement each other is shown in the center spread of our Annual Statement.

Since 1919 our business has grown through contact directly with our user customers. We have always followed our sales closely, and for a long while our own home office personnel installed every truck sold. The war and greatly expanded volume made this impossible. We, however, increased the number of service offices throughout the country which carried adequate replacement parts and mechanical skill and developed rewarding contacts by keeping old and very scarce equipment running during war times. Our active interest in extending service and maintenance has put us closer to our customers than any of our competitors, and this has been rewarding in many many ways.

Remember we have had only one product and only one interest all of these years. We are not a manufacturer of components supplying end product builders. We are not a parts supplier to any manufacturer of any product.

Therefore, by the very nature of single interest, we have always been close to our user customers and their service needs. Out of our concentration of effort in this field, our parts, rebuilding, repair and maintenance business alone amounted to over \$10,000,000 in 1956.

THE SERVICE BUSINESS

We have 14 factory service branches throughout the country and our representatives have 57 additional units, making a total of 71 in all. They all have adequate parts to serve the users of our trucks in their territories and to offer mechanical assistance, preventive maintenance and rebuilding services. The growth of our service business over the years has been greater in percentage than our truck sales. This gives us a hard core of steady income which in percent to total sales cannot be duplicated by any of our competitors.

The reason for this high volume is found in our 14 service branches selling at the retail level. None of our competitors has anything like the same number of direct factory service branches. Immediately upon acquisition, Gerlinger acquired 16 new sales offices through the addition of their line for Towmotor representatives who did not already have both. This increased their outlets approximately 50% and all of them are east of the Mississippi River, where Gerlinger has not been too competitive. This move should greatly help the Gerlinger sales volume as soon as the new representatives get acquainted with the line. Stimulation is already evident and the volume from these new sources should grow rapidly.

Gerlinger handled their service business chiefly out of their plant in Oregon and 2 franchised parts warehouses—one in Cleveland and one in Memphis, Tennessee. This

method did little to build parts volume and nothing at all to attract the sale of services and rebuilding. With the merger, Gerlinger parts will be available in all 71 Towmotor locations, and each location will attract maintenance contracts and rebuilding services which up to this time were not available except through alley garages or the customer's own maintenance department where they rarely found adequate understanding to properly service the product.

We believe the added volume in parts and services for the Gerlinger line will add substantially to our own expanding service business and improve our steady income from this source.

Over the years I have heard so much about "growth stocks" and knowing little about the subject, I welcomed the article in *Business Week* of May 11 entitled "Growth Stocks Visit The Doghouse." In reading the article, some areas seemed to be parallel to our own Towmotor experience. The article quoted from Moody's Investment Advisory Service as follows:

"Recent market performance of some growth stocks left certain doubts among investors. However, this type of stock remains the best of *long term* investments . . . There can be no greater disservice an investor can do for himself than to sell such stocks because of disappointment over their market performance during some short period of time—a few months or a year or so."

Never having a definition of "growth" as applied to stock, I was delighted to find one which again was quoted from Moody's:

"One which promises to expand its per share earnings and dividends faster than the average over a period of years—between 5 and 10 at a minimum, not merely a year or two."

Ending its quotation of Moody's, the *Business Week* goes on to say:

"*Time's the thing*—growth stocks must be held a long time to cash in on them. Growth companies usually keep dividends low plowing the bulk of earnings back into the business."

TOWMOTOR PERFORMANCE

Although I know I was in very dangerous territory to wander into your special field without a good guide, I was tempted to measure Towmotor performance with the performance of the Dow Jones industrial stocks. If I am all out of order in thinking that this would be interesting to you as well as myself, clobber me later and let me have my fun for a moment.

Earnings—Let us look first at earnings. Our average annual earnings per share for the last 5 years were 36% higher than the average of the previous five years. This compares with Dow Jones Industrials' increase of 22%. Remember, these are averages. Moving to 1956 results, Towmotor earnings per share were 116% higher than 10 years ago while the Dow Jones figure was 86%. Our 1956 earnings were 82% higher than 5 years ago with Dow Jones figure being 26%. I do not know—do we qualify in this area?

Dividends—Turning to another phase of the Moody definition, that of dividends, average annual dividends for the last 5 years were 20% higher than the average of the previous 5 years. For 1956 our dividends were 78% higher than 10 years ago and 20% higher than 5 years ago. Our dividend rate at the end of 1956 was 107% higher than 10 years ago and 40% higher than 5 years ago. Maybe this indicates growth performance. Business Week's comment was that growth companies pay a small proportion of earnings in dividends.

In relationship to the market value of our stock, the dividends paid have always represented a reasonable return on investment. Despite this return on investment, dividends in relationship to earnings have been conservative with the average over the last 10 years being 44% of earnings, while the Dow Jones Industrials paid out 58%. This conservative policy, in turn, has resulted in the very consistent and substantial growth in net worth; or, in book value per share if you like which at the end of 1956 had increased 144% over 10 years ago and 63% over 5 years ago.

I know your special interest lies in the area of what we are doing now and what can be expected for the balance of 1957 and as far out as I might venture a guess.

A FORECAST

To forecast our earnings even on the short term basis is difficult for me at this moment. The total industry sales figures are off approximately 15% for the first 4 months compared to 1956. Towmotor's sales, not including Gerlinger, are off 11% for the same period.

As a guess we will show something between \$1.10 and \$1.30 a share for the first half. This will compare with \$1.63 for the last half and \$2.07 for the first half of 1956.

For the full year my hope is that we will come out somewhere near \$3.00 a share. If we do this, 1957 will be the second best year in our history—1956 being the best.

Earnings for the first six months of this year will be principally affected by a fall off of Gerlinger sales as a result of a depressed condition in the lumber industry which accounts for a substantial part of their market. This condition appears to have run its course and Gerlinger orders for the current month are expected to be almost triple the average of the first four months. With a return to normal conditions in the lumber industry, and with the results of a more active sales program in the heavy industries, my prediction for the full year could turn out to be conservative.

Towmotor is showing a decided upward swing in sales, and, to back our confidence that this will continue, we have increased our production schedule 30% between now and September.

For the longer outlook I make no prediction except to remind you that over the past 10 or 11 years in which we have had public shareholders we have enjoyed substantial growth. Though it has not all occurred in a straight line, I see nothing to change that long term trend.

Our confidence in the future can best be demonstrated by pointing out to you that our engineering budget for 1957 is up 40% over 1956. This will insure new and more competitive products. We will invest more in service facilities in 1957 than we have in any other 3 years combined. Also, we have this year established a completely new assembly line over which we believe we can produce 50% more product without the need of additional space.

Some of these expenditures you will readily recognize as non-recurring expenses. These too should add to our success in the future.



DIVIDEND NOTICE

The Board of Directors has declared a regular quarterly dividend of 25¢ per share on the common stock of this Company, payable June 15, 1957, to stockholders of record at the close of business May 31, 1957.



R. L. TOLLETT,
President

Big Spring, Texas

May 20, 1957

Common and Preferred Dividend Notice

May 6, 1957

The Board of Directors of the Company has declared the following quarterly dividends, all payable on June 1, 1957, to stockholders of record at close of business, May 14, 1957:

<u>Security</u>	<u>Amount per Share</u>
Preferred Stock, 5.50% First Preferred Series . . .	\$1.37½
Preferred Stock, 5.85% Series	\$1.46¼
Preferred Stock, 5.00% Series	\$1.25
Preferred Stock, 4.75% Convertible Series	\$1.18¾
Preferred Stock, 4.50% Convertible Series	\$1.12½
Common Stock	\$0.35

W. H. Angone
Secretary

TEXAS EASTERN  **Transmission Corporation**
SHREVEPORT, LOUISIANA



13 MILLION GALLONS BIG...BUT JUST A DROP IN THE BUCKET

The ESSO WASHINGTON is the newest of the 110 ocean-going tankers in the Esso fleets. She can carry 13 million gallons of oil. But that's just a drop in the bucket compared with the 40 billion gallons that Jersey Standard affiliates delivered to customers last year.

As economies expand . . . as populations grow . . . as people live better, oil must provide more energy to power factories, to drive ships and planes and motor vehicles, to heat and light homes and offices. Last year we supplied more than twice the oil we did ten years ago. This year our customers will need still more.

It's a big job . . . and it requires vast amounts of costly equipment. As our Annual Report points out, we spent \$1,083,000,000 last year searching for oil and gas and paying for such things as tankers, pipelines and refineries. And in 1957, we plan to spend another \$1,250,000,000 to find, produce and deliver the oil people will

be needing tomorrow . . . and ten and twenty years from now.

Because Jersey Standard is willing and able to make such investments and because our operations are efficient, we make a profit. In 1956 it was \$808,535,000. About half of it went back into the business to help pay for the new facilities.

Our successful year was good news for the 403,000 shareholders who own the company . . . they got dividends of \$2.10 per share on the money they invested.

It was good news for our 156,000 employees . . . whose wages and benefits came to \$906,000,000.

It was good news for governments. Operating and income taxes, import duties, con-

sumer taxes and other payments from our operations brought to the United States and other governments a record \$2,171,000,000. That was five times the dividends to shareholders, more than double the payroll and benefits to employees.

Best of all, our operations were good news for the people of the free world, who rely heavily on the energy of oil for their economic and social progress.

In this, our 75th anniversary year, we intend to continue our efforts to remain successful, profitable and growing, in order to serve people well.

If you would like a copy of our 1956 Annual Report, write us at Room 1626, 30 Rockefeller Plaza, New York 20, N. Y.



STANDARD OIL COMPANY (NEW JERSEY)
AND AFFILIATED COMPANIES

producing energy for an abundant life

ALCOA—SQUARE D

Analysts visited the Cleveland works of Aluminum Company of America and saw two of the world's largest forging presses. Owned by the United States Air Force, the 50,000-ton Mesta press and the 35,000-ton United press are in a \$40 million Government installation adjacent to Alcoa's own extensive forging operation. The presses and millions of dollars' worth of auxiliary equipment required by them are located in a 12-acre aluminum-sheathed plant operated by Alcoa.

The visit also included a look at the Cleveland Branch of the Alcoa Research and Development Laboratories. Analysts were guests of Alcoa for lunch, followed by a presenta-

tion of the company's story by senior management representatives.

The group then moved on to the Cleveland plant of the Square D Company. This is the brand new 340,000 square foot plant of the Electric Controller Division. Output covers a wide range of products, but is concentrated on motor starters and controllers used by heavy industry, and largely engineered to meet specific customer requirements. Electro magnets are also important in the line. This great plant is a model in the industry. In addition to the plant tour, the trip incorporated a full scale conference with top management.

Aluminum Company of America

EDWARD W. McNELLY

Aluminum Company of America became an industrial citizen of Cleveland in 1909—twenty-one years after the company was established in Pittsburgh, Pa.

The years since then have recorded the steady growth and expansion of Alcoa's Cleveland works, to the point where today it represents one of the largest investments of the whole aluminum industry. It has been referred to as the "mother plant" for other Alcoa forging and casting operations throughout the nation. In addition to the extensive forging and casting operations conducted here, Alcoa also maintains a district sales office, a branch of the Alcoa Research Laboratories, and a development engineering division in Cleveland.

Alcoa employs some 3,500 men and women in Cleveland—many with over 25-years experience with the company. The Cleveland works payroll last year exceeded \$17 million, with another \$2 million spent for vacation allowance, retirement, social security, workmen's compensation and hospital insurance. Local purchases for services and supplies amounted to nearly \$6 million last year, and some \$295,000 was paid in local taxes on the 150 acres housing Alcoa's plant and equipment.

The Cleveland works of Alcoa is divided into four units:

(1) A sand foundry, dating back to 1918 when production of aluminum crankcases, oil pans and camshaft housing

for "Liberty" airplane engines began. Today, castings made here range from Diesel engine parts and tire molds to aircraft cylinder housings and components for atomic energy power plants. Capital expenditures for renovations and modernization of this foundry in the past few years amounted to about one million dollars.

(2) One of the largest forging operations in the world—with hydraulic presses ranging from 600-ton to 50,000-ton pressures, and a wide variety of hammers and mechanical presses. Products made here include propellor blades, automobile and truck wheels, and numerous parts for the aircraft industry. Most recent addition to Alcoa's forging operations is the new U. S. Air Force Heavy Press Plant, adjacent to Alcoa's Cleveland works, which houses the largest forging presses in the world.

(3) A remelt plant, established in 1920, for casting aluminum ingots used both by Alcoa and its customers in casting, forging and extrusion operations. This plant recently underwent a \$3,500,000 expansion program.

(4) A permanent mold foundry, construction of which began in 1916 for the production of automotive and aircraft pistons. Since then, this plant has added to its line castings for cooking utensils, vacuum sweepers, highway bridge railing posts, washing machine agitators, cylinder heads and pistons, hand-iron sole plates, waffle grids and a variety of aircraft components.

HARRIS SEYBOLD — THOMPSON PRODUCTS

Salient Points of Trip

EDWARD S. WILSON

Hallgarten & Co.

EIGHTY-FIVE ANALYSTS enjoyed the tour of the Harris-Seybold plant in Cuyahoga Heights. At the company's "Printing Press Laboratory" a remarkable demonstration of its work in the field of lithographic chemicals and the new "pre-sensitized" photo-offset printing plates was seen. Then came the opportunity to view the Harris metal decorating press in operation. These machines, which print sheets of tin plate for use in making cans for frozen juices, beer and food, have opened up an entirely new market. On the press erection and testing floor, a large four-color offset press was undergoing final testing, an impressive sight. Finally, the analysts visited the Production Planning Department and were given an insight into the way in which the company's carefully developed sales forecasting studies are translated into highly accurate planning schedules, which are established for as long as eighteen months in the future.

Following this plant tour, the group was addressed by George S. Dively, President, and J. W. Powell, Vice President-Finance, of the company. In their talks, the two executives stressed the growing importance of the printing industry and the vital role played by Harris-Seybold as one of the industry's principal equipment suppliers. Over the past ten years printed advertising has grown at a rate 1.6 times and color printing at a rate of 1.9 times that of the Gross National Product. The printing industry is the eighth largest in the United States with a sales volume of \$9½ billion a year and is represented by 40,000 companies with 800,000 employees. The largest, fastest growing and most diversified segment of the printing industry is commercial printing, which constitutes the principal market of Harris-Seybold. This segment comprises 30,000 companies with an annual sales volume of about \$3.7 billion. With the acquisition this month of Intertype, newspapers will become the company's second largest market, although it does not make newspaper presses. The Cottrell division is a leading producer of all-color presses for the magazine publishing field.

The consolidated company, including Intertype, is the leader in most of the products for the printing industry. It is the largest producer of offset presses, which account for over 50% of total sales and 50% of the industry. Printing by offset presses has a 7½% annual growth rate, or about double that of letter and gravure presses. Harris-

Intertype is the second largest company in the type-setter field (1/3 of the domestic market) and is the leader in photo-setters. Paper cutters comprise about 10% of consolidated sales (2/3 of the market for power cutters). Cottrell magazine all-color presses account for another 10% of sales and around 2/3 of all magazine presses used by the printing industry. In line with the growth of the printing industry, dollar sales of Harris-Seybold have grown from \$12 million in the fiscal year ending June 30, 1947, to \$42.5 million in the 1956 fiscal year. During the same period, earnings before taxes increased from \$1.6 million to \$7.1 million and dividend payments from \$225,000 to \$1.3 million. After the remarks of Mr. Dively and Mr. Powell, a luncheon was served by the company.

THOMPSON PRODUCTS

The last stop was the home offices and gigantic Tapco plant of Thompson Products at Euclid. There the analysts were greeted by the top management at a large and graphic exhibition of the company's principal products in the aeronautical and automotive fields. After a few minutes of viewing this exhibit, the group adjourned to the auditorium in the main office to hear a word of welcome from James H. Coolidge, Vice President-Finance, and short talks by J. D. Wright, President and General Manager, and A. T. Colwell, Vice President-Research and Development.

Mr. Wright outlined the process involved in the company's sales and earnings forecasts which are made three years ahead and revised three times a year. Ernest C. Brelsford, Treasurer and director of these forecasts, consults constantly with the automobile and aircraft industries and leading economists. Automobile production is estimated at 6 million units in 1957, but fulfillment of this forecast will require a strong upsurge in the second half with the new General Motors line. In 1958, automobile production is estimated at 6-6.5 million, truck output at 1.25 million, cars on the road at 59.4 million, military aircraft sales at \$6.8 billion, guided missile sales at \$2.0 billion and civilian aircraft at \$1 billion. In 1959, automobile production is forecast at 6.6 million, truck production at 1.3 million, cars on the road at 62.0 million, military aircraft sales at \$6.8 billion, guided missile sales at \$2.2 billion and civilian aircraft sales at \$900 million.

The company's sales to the aircraft industry accounted

for 67% of the total in 1956 and are estimated at 70% in 1957. Over the next two years, this ratio should range between 60% and 70% as the military market has softened and there has been a downward revision of spending estimates. Much will depend upon the production rate for the new B-52 bomber. Mach 1 speeds (660 miles per hour) are now commonplace. Fighter planes with a speed of Mach 2 (1,400 mph.) went into production in 1956 as well as a bomber in Mach 1. A new experimental fighter is now being built with a Mach 5 range (4,000 mph.). However, there is a serious cooling problem at these high speeds. Eventually, one-half of the tasks of the Strategic Aircraft Command will be performed by unmanned missiles and this ratio will be 90% for the Air Defense Command. It is expected that the 1960 military budget will be split 50-50 between manned and unmanned aircraft.

The management looks for a steady but not spectacular increase in automobile demand over the next ten years with sales rising from the present "normal" demand of 6.5 million cars to 10 million units annually in the early 1960s. The company's automotive sales amounted to nearly \$9 per car in 1956, are expected to be higher this year and should continue in an upward trend, aided by the new Detroit plant. Despite the longer wear of automobiles, replacement demand is rising due to the increasing number of cars on the road.

The management regards the electronics field as the "biggest bet" for the future. This market is expected to

grow from \$10 billion in 1956 to \$15 billion annually by 1960. Ramo-Wooldridge, now 54% owned by the company, has had over-all responsibility for the Atlas and Titan long range missiles and the Thor intermediate range missile. Ramo has excellent possibilities in the communications field, particularly airborne electronic controls. It has operated in the black every month since November, 1953, had nearly \$30 million of sales in 1956 and could reach \$60 million this year. In the opinion of the Thompson management, atomic energy should pay its own way.

Mr. Colwell indicated that the progress of nuclear energy at the present time is similar to that of the automobile industry in the 1919-1920 period. The company's analog computer is expected to play an important role in control of nuclear-powered aircraft.

Ramo-Wooldridge is producing a switch for the Dew line radar warning system and it is thought every new Navy vessel will be atomic-powered. However, with a power cost of 15 mills per kwh. vs. 5-8 mills for conventional fuel, it will be necessary to increase the burn-up rate of atomic power from 1% to 3% to make it competitive in commercial uses.

This visit concluded with a tour of the Jet, Accessories and Pneumatics Divisions of the Tapco plant. There will be a lasting impression for analysts of two intelligent and foresighted managements with a promising future. They establish the fact that in the Cleveland area lie far reaching and promising industries.

Newport News Shipbuilding and Dry Dock Company

Quarterly Statement of Billings, Estimated Unbilled Balance of Major Contracts and Number of Employees

	Three Fiscal Months Ended	
	March 25, 1957	March 26, 1956
Billings during the period:		
Shipbuilding contracts	\$24,433,310	\$18,254,283
Ship conversions and repairs	10,099,597	3,202,795
Hydraulic turbines and accessories	560,469	1,172,595
Other work and operations	4,218,848	1,529,489
Totals	\$39,312,224	\$24,159,162
	At March 25, 1957	At March 26, 1956
Estimated balance of major contracts unbilled at the close of the period	\$383,909,565	\$200,205,562
Equivalent number of employees, on a 40-hour basis, working during the last week of the period	13,527	10,665

The Company reports income from long-term shipbuilding contracts on the percentage-of-completion basis; such income for any period will therefore vary from the billings on the contracts. Contract billings and estimated unbilled balances are subject to possible adjustments resulting from statutory and contractual provisions.

By Order of the Board of Directors
R. I. FLETCHER, Financial Vice President

April 24, 1957

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"A DAY OF CHEMISTRY"

Dow Chemical

LELAND DOAN

President, Dow Chemical

AT THE RISK of putting forth a certain amount of information that you may already know, it still seems appropriate to start with a little thumbnail sketch of Dow's scope, operations and facilities.

We are the fourth largest United States chemical company. Du Pont is first, Union is second and Allied third. Our sales for calendar 1956 were about \$600 million, with both sales and profits about 10 per cent higher than for calendar 1955.

Our consolidated operations currently employ 27,000 people, and that does not include the personnel of our three associated companies, nor of the government owned atomic energy plant which we operate in Colorado. The latter categories account for about 3,000.

We have 71,000 stockholders and plant properties, which cost \$850 million. Last year, for fiscal 1956, we showed net profits of \$60 million, but if you have been following our quarterly reports you will have recognized that they will be less than that this year. As of the end of our third quarter our net was off almost 11 per cent from the previous year. The profit squeeze has been plaguing us, and we had a costly five-week strike at one of our major divisions early in the year.

Operationally we are diversified, quite decentralized and rapidly becoming more so, as you will see later on.

Midland, Michigan, is our headquarters, and also the site of our largest and most diversified manufacturing division. We employ 12,000 people there, including administrative and research personnel. Our Midland plant is the largest chemical plant in the United States and makes almost every Dow product.

In Michigan also we have a small brine products plant at Ludington and a magnesium foundry at Bay City. Within the last year we have also acquired a 10,000 barrel per day oil refinery at Bay City. We will shortly start construction of a petrochemicals plant adjacent to the refinery, the chief product of which will be ethylene, one of our basic building blocks, for use in our Midland plant.

Additionally, we have a two-thirds interest in Cliffs Dow Chemical Co., located in Michigan's upper peninsula, which processes wood into charcoal and wood distillation products.

Our second largest division is in Texas, where we have extensive facilities at Freeport and Velasco, located about six miles apart on the Gulf of Mexico. With abundant raw materials, relatively low cost fuel and excellent access

to both ocean and river-barge transportation, this division specializes in the production of basic-heavy-tonnage chemicals and magnesium.

We have established a system of bulk storage terminals, largely on the east coast and the Mississippi river network, which are serviced from Texas by two specially designed ocean-going tankers and a number of barges. The combination gives us essentially the competitive advantage of having producing units wherever we have terminals.

Much of the magnesium travels by barge to Madison, Illinois, where we have a large mill producing magnesium sheet and wrought products. At Madison is the first mill ever erected for the large scale rolling of magnesium sheet and plate, and we are just now making experimental pushes on a new 13,000-ton extrusion press which will permit us to extrude tubing up to 24 inches in diameter and sections such as I-beams up to 28 inches high.

The Madison mill has had a lot of start-up headaches and has thus far been rather costly to us—to quite a degree because we are writing much of it off under certificates of necessity—but efficiency is improving and we think the day is not far distant when it will be on the profit side of the ledger.

In California we have plants at Pittsburg, near San Francisco, and in the Los Angeles area. Our Western division makes quite a broad line of products, chiefly for consumption in West Coast markets.

We produce natural gas in Texas, California, and Michigan to the extent of about one-third of our requirements through a division known as the Brazos Oil and Gas Co.

Swinging back to the East, we have a plant at Allyn's Point, Connecticut, which produces polystyrene plastics and Styrofoam from materials shipped by water from Texas. I might add we now produce Styrofoam, which has a very high bulk-to-weight ratio, in five locations, including Midland, southern California and two plants which are new within the last year—one near Ironton, Ohio, and the other near St. Louis, Missouri.

Currently in the early stages of construction are two additional divisions. One will be a synthetic fibers plant near Williamsburg, Virginia. The other is located on the Mississippi River south of Baton Rouge, Louisiana. This latter location has many of the natural advantages found in our Texas division, and, like it, will be a rather broad based heavy chemicals operation. We expect initial production

to start there next spring. . . Our Louisiana division will represent an initial investment in excess of \$50 million. Through purchase of a lumber company we have also acquired a 60,000-acre tract containing producing oil and gas wells near the Louisiana plant site.

In the realm of subsidiaries I have already mentioned Cliffs Dow. There is also Dow Chemical of Canada, which is a sort of small Dow Chemical, located at Sarnia, Ontario, and making quite a number of the products we make at other locations. Dow Canada is wholly owned.

Also wholly owned is Dowell, Inc., which has headquarters in Tulsa, Oklahoma. Dowell is a rather specialized operation, offering a number of services to the oil and gas industry, such as the acidizing and fracturing of wells. It is primarily a service organization, but serves as an outlet for some of our chemicals.

We also have two export subsidiaries, with headquarters in Midland, but their function is more in the area of sales than production, so they do not directly represent facilities or manufacture. Partially through them, however, we are acquiring quite a number of foreign operations, and own all or part of companies in Holland, Argentina, England, Venezuela, Mexico, Japan and India. While their aggregate is fairly substantial, none individually is very large as yet.

Finally, there are three associated companies in each of which we hold a half ownership. They are Dow Corning of Midland, which produces silicones and is growing rapidly; Ethyl-Dow, which produces ethylene dibromide at Freeport, Texas, for use in anti-knock fluids; and Saran Yarns, which produces fine fibers of saran at Odenton, Maryland.

The word most closely associated with Dow is "growth"—and while we never stop building our growth has understandably been cyclical rather than following a straight-line curve.

Following World War II we expanded very rapidly but tapered off to only \$29 million of capital additions in 1950. Then came the Korean war and government necessity certificates and we expanded tremendously, spending as much as \$145 million for new plant in 1952 alone.

From this we tapered down again to \$49 million in 1955. Last year we went back up to \$59 million, and this year we will show a new all-time high—something in excess of \$150 million. However, we expect capital additions in the next fiscal year to be higher than in this one.

The large expansion of the early fifties under necessity certificates naturally left us with some excess of capacity for civilian needs when the military needs did not prove as great as anticipated.

So in 1954 and 1955 our sales were at only about two-thirds of theoretical capacity. In fiscal 1956 they rose to almost 80 per cent of capacity and in our business 85 per cent is roughly par for the course, or practical capacity. This accounted for our earnings looking particularly good last year as compared with the preceding two years.

OPERATING AT A HIGH LEVEL

This year we have again operated at a high level, other than for the first-quarter strike, which I mentioned earlier. This year a new influence has crept into the picture—the profit squeeze. Our labor costs, and the cost of most things

we buy, are higher while the competitive situation is such that very little of this increased cost can be passed on. Chemical prices have not stabilized. Some have gone up. But, on the other hand, some have gone down, so in the over-all the general level has stayed about even.

This is not a unique situation for the chemical industry. It is one which confronts most of industry today. I suppose at least three things can happen in this kind of a situation. To take the dimmest of views, the investor might be expected to eventually reorient his thinking as to what constitutes a good earnings picture and a fair return on his invested dollar.

Conversely, we might expect that, competition or no competition, prices will ultimately be forced up by the increasing pressure of increased costs. In many companies higher wage rates are already contracted for one or two or more years ahead. At the same time, and this, I think, is all to the good, management must seek out inefficiencies, improve technology and devise and adopt more highly automated methods of operation.

While the going may be rough for a bit, I have every confidence that in due course chemical profit margins will be restored to the levels investors have come to expect.

THE FINANCIAL SIDE

During the three years or so of reduced capital expenditures our large depreciation resulting from rapid write-offs enabled us to reduce our senior obligations materially. At the end of 1953 we had \$350 million of debt issues and \$30 million of preferred stock outstanding. Since that time we have redeemed our preferred stock and reduced our long term debt to about \$135 million. We currently have short term borrowings from banks amounting to about \$50 million.

While it was nice to be able to make such reductions we feel our objective is to invest capital profitably; not simply pay back what we owe. So we actually would have been happier if we had had promising new products or other visible markets which would have justified the reinvestment of that money.

Capital investments and the need for industry generally to invest heavily in more automated facilities brings up the controversial question of Federal tax policies with relation to depreciation allowances.

There are a number of schools of thought on this, the extremes, of course, being represented by those who hold that original cost only should be recovered, and, conversely, by those who hold that complete replacement cost should be recoverable.

The argument has been aggravated in recent years by the fact that we have been in a period of rapid inflation or rapid devaluation of the dollar, however you want to put it. Thus the dollar recovered today as a depreciation allowance for a plant or piece of equipment 10 or 15 years old will buy only a fraction as much as the dollar which was originally invested.

We have invested a dollar with the assurance that we are legally entitled to recover it, but instead find that we can recover only 50 or 60 cents, depending on when the investment was made and the recovery taken.

A number of remedies have been proposed, and I do not intend to pass judgment on them or propose one of my own. I do think, however, it is time industry and government recognized a couple of facts of life, or, perhaps more correctly, considered a couple of obvious facts of life with relation to this problem.

THE ECONOMY NOT STATIC

The economy is not a static thing. It moves. And from way back, temporary deviations to the contrary, it has been a gradually but consistently inflationary economy and there is nothing to indicate that this long term trend will be replaced by a long term trend in the other direction.

I have said before that I consider gradual, gentle inflation as stimulating to a high level of production and progress, whereas deflation is likely to breed retrenchment and stagnation through fear, pessimism or a simple putting off of things, hoping for a better price, depending upon its degree.

Another thing to be regarded is that industries, corporations, businesses in general tend to be perpetual in nature. They do not make an investment, recover it with whatever profit they can contrive and then fold their tent. They go on and on, plowing back, moving forward and adjusting to changing conditions. My own company will be 60 years old this month and it is just an infant compared with many of the country's business institutions.

And I am certain of this: that outside of annihilation of some sort there will always be a Dow Chemical Co., and a Du Pont and a General Electric and a Sears, Roebuck. The owners, the managers, even the names may change, but the business entity, one way or another, continues on.

Now it seems to me that in our tax attitude toward depreciation we have been treating business as though it were operating in a completely static economy, as though the dollar had a constant value in purchasing power whether in 1910 or 1930 or 1960.

Our whole corporate and individual tax structure has been such that venture capital has been harder and harder to come by. Business has had to depend increasingly upon retained earnings for expansion and for the replacement of worn-out facilities, and this in itself has a discouraging effect upon new venture capital because of the correspondingly lower dividends that can be expected.

We are going to have to take a realistic look at our tax structures and policies in the light of an ever-changing economy and make appropriate adjustments to assure business and industry the capital it needs for survival and for future growth and progress.

PRODUCTS RECENTLY DEVELOPED

Comment regarding products is in order, and I will briefly try to mention a few of the more recent developments. You might bear in mind that typically a little more than half of our sales dollar is accounted for by general chemicals, which includes a lot of heavy tonnage basic and intermediate items without much glamor to them and where developments, if any, likewise do not especially stir the imagination. They are truly as uninteresting as bread and butter but we are apt to lose the proportion

of things if we do not keep in mind that they are equally basic.

About one-third of the sales dollar comes from plastics, and the balance is split between agricultural chemicals and magnesium in proportions which are quite likely to vary from year to year.

Everyone always seems to be interested in synthetic fibers, and since I mentioned earlier that we were building a fiber plant in Virginia perhaps I had better elaborate on that a bit. This is a nitrile alloy fiber which we have had under development for half a dozen years. One of the ways in which it differs from existing acrylic fibers is that it has superior receptivity to dyes. How much this may mean to the public perhaps remains to be seen, but from a practical technical standpoint we think it will mean quite a bit to the trade.

We know we are entering a highly competitive field, but we have not gone into it hastily and we think we have a material which can do a good job of competing. Incidentally, we call the material Zefran, and I hope within a couple of years you will be hearing a lot about it.

In the area of agricultural chemicals which are in or emerging from the stages of field development. Dalapon, for example, has proven itself highly successful as a selective grass killer, that is it kills most grassy type vegetation without harming most broad-leaved plants. It is used industrially, to keep parking lots, railroad rights-of-way and similar areas free of unwanted grass, and can be used agriculturally to keep grass out of certain growing crops as well as to free drainage ditches of cattails and similar reedy vegetation.

It has been certified for use in cotton, sugar cane and sugar beets and we think has good possibilities for eradicating quack grass from such crops as corn and potatoes.

Baron is a relatively new non-selective herbicide which has the additional effect of sterilizing the soil for as much as a full growing season. This, again, works well in industrial areas. The reverse side of the picture is that most existing soil sterilants will not kill vegetation already growing, so our material has the advantage of knocking out what is there and also keeping anything from sprouting for several months. It, incidentally, is produced from materials we were already making, so has not required much in the way of new investment.

The field of growth control agents keeps taking on new aspects of significance. For example, the sugar beet, springing from a multi-germ seed has traditionally required a lot of hand thinning and weeding has been done along with the hand thinning. The efforts of years to split the seed into monogerm units seem about to pay off, which will open the door to mechanized beet culture. This, in turn, will open up a new opportunity for Dalapon or some similar material to keep grass out of the beets by simple and efficient spray methods.

Another new and interesting aspect under development is the use of growth control agents as a conservation tool in wildlife management. Experimentally, new waterfowl resting areas have been opened up by killing back marshy growth which had completely covered the water. And in other experiments deer browse has been improved by kill-

ing back top growth and thus permitting lower vegetation to flourish. In both cases, of course, the spraying is done by aircraft.

We have another new material. This one is really so new we do not as yet know what its possibilities are or whether it should be considered an agricultural chemical, a plastic or what. I mention it only because it is sort of an oddity. It has no name as yet, but someone has referred to it as a turf cosmetic.

Essentially it is a latex based paint which can be sprayed on grass in the fall or winter to give it the natural green appearance of summer growth. It is harmless to the grass, people and pets, will last all winter and does not interfere with the natural greening of the grass in spring.

I do not know whether we shall all insist on a green lawn the year around, but it is not inconceivable that institutions that take considerable pride in their landscaping, or that use landscaping to attract customers, might welcome such a development.

Magnesium continues to be in increasing demand for military applications, both for aircraft components and for equipment which may need to be airborne. Some of our newer alloys, such as magnesium-thorium alloys, which retain much better strength at elevated temperatures have made new uses possible.

The Navy's new Crusader jet fighter which broke the speed record last fall at 1015 miles per hour makes extensive use of magnesium sheet and structural forms. More than 25 per cent of its external skin is magnesium sheet and it employs in excess of 300 magnesium castings.

Likewise approximately half of the skin of Sikorski's huge S-56 helicopter, which broke helicopter speed and altitude records in November, is magnesium sheet. It employs 2,280 pounds of sheet, 1,100 pounds of magnesium forgings, 1,400 pounds of sand castings and an additional 660 pounds in extrusions, rods and bars.

I am happy to say civilian markets continue to grow, however. Photoengraving sheet, luggage, industrial tooling plate and anodes are all becoming good volume outlets.

Plastics is an ever changing and always interesting phase of our business. Our new styrene-acrylonitrile copolymer Styrex, which has been in commercial production for only two or three months, has enjoyed a good market acceptance and we are already considering expansion of the ultra-modern plant which we just completed.

It is tougher and more resistant to heat, solvents and abrasion than polystyrene and is doing well in housewares and automotive parts as well as in a number of rather specialized technical applications.

I think early in the game here I mentioned our making Styrofoam in five different parts of the country. This light weight insulating material just keeps on growing in volume both as an insulating material and for all sorts of novelty and decorative uses. Originally limited pretty much to refrigeration as an insulating material, it is now getting a good foothold for perimeter insulation in slab type building construction. It has excellent possibilities for other structural uses when laminated between sheets of plywood, metals, fiber glass and similar materials.

Probably most of you have at least a passing acquaint-

ance with Saran Wrap. The industrial market, that is, for packaging of processed foods, continues to grow although the household roll market appears rather to have stabilized, at least temporarily.

We are, shortly coming out with a new dispenser which we think is going to lick the sometimes aggravating problem of getting it off the roll and this might give it another spurt. We have a feeling there are many housewives who like the material but became weary of trying to get it out of the box. It is a paradoxical material in that the very properties which make it good also make it a bit difficult to handle.

We have introduced some saran latexes and resins for coating other films to improve their vapor-barrier characteristics, and they are doing quite well. Some of them are particularly adaptable to cellophane.

Also recently introduced are latex paints for metals. While it is a bit early to speculate on the potential, preliminary work indicates that they have excellent possibilities as a base or primer coat for metal structures. Needless to say, many areas of the metals finishing industry would be glad to replace flammable primers with a safe and simple water based paint system.

Last year we added high-pressure polyethylene to our plastics line with a 20 million pound per year plant, and it has been sufficiently successful that we are already making a major expansion. We are also sampling the market with a low-pressure type, made by a Dow-modified Ziegler process, which appears to hold a lot of promise.

Another interesting development, still quite developmental at the moment, is a combination of thermosetting epoxy resins with expandable polystyrene beads. Foamed in place, or, shall we say, within a mold of some sort, this results in a material which is strong structurally, has good insulating qualities, a hard finish and is light in weight. By such means, for example, it would be possible to mold a complete refrigerator door all in one piece and with the hardware already attached assuming it was properly placed in the mold beforehand.

DEVOTION TO RESEARCH

I guess I could go on and on talking about new developments. I have tried merely to offer a glimpse here and there in a variety of fields and, in some cases, frankly, without much relationship to the possible profit potential.

All of this, however, implies one thing in common, and that is a devotion to research. Quite a portion of our new capital investment in recent years has gone into laboratory facilities. Much of it has been on the order of "catch up" because we have always believed that a good research organization consisted of people first, equipment second and housing third. But there comes a time when housing has to be provided or the other two segments cannot function effectively.

We have always been proud of our people and our equipment. We can now be justly proud of the laboratories themselves. From them, I am sure, will flow many more of the sort of things I have mentioned here today—Dow's answer to an ever changing, highly competitive and progressive technology and economy.

Diamond Alkali Company

RAYMOND F. EVANS

Chairman of the Board, Diamond Alkali Company

WE CONSIDER IT AN HONOR to have been invited to participate in this meeting of the National Society and to appear before you on this program in company as distinguished as Dow and Hooker. All three of us, Dow, Diamond and Hooker, depend upon chlorine and chlorine products for a very substantial portion of our sales volume, and it seems to us that you are running a rather considerable risk of receiving an over-dose of chlorine by the end of the day.

But if you are ready to run such a risk, we will move right along into our subject matter and tell you what Diamond is doing to improve earnings. That is, after all, what our stockholders employ us to do, and certainly that is of paramount interest to you.

We are proposing to approach this question from four different directions. First, Jack Sargent, president of the company, will bring you up to date on our current situation and will then discuss future prospects. Second, Al Ingley, Manufacturing Vice President, will tell you specifically how we are approaching the general problem of reducing costs. Third, Thornton Holder, director of research, will discuss research. And then I will undertake to tell you something of our organizational philosophy. All of us will key our remarks to the question "What are we doing to improve earnings."

Messrs. Sargent, Ingley and Holder then presented their reports, after which Mr. Evans continued:

Now, I would like first to summarize briefly the remarks of my three colleagues—Jack Sargent has drawn a picture of how, in the past ten years, we have blossomed from a regional producer of basic alkalis into a diverse operation with 15 plants in 10 states, how our product line has been extended and broadened in both the inorganic and organic areas, but primarily the latter, and finally he has pointed out the direction of our current sizeable expansion program. As you can see, this program is designed to strengthen our position in our traditional alkali products by modernizing our plants, to provide additional chlorine capacity for captive use, and finally to utilize the C_{12} with hydrocarbons to round out and extend the toehold we have established in chlorinated organics and in plastics by adding companion and complementary products which fit well into our marketing activities.

Al Ingley has outlined some of the methods we are using in the fundamental and all-important area of cost control with some illustrations of recent solid progress. What seems important to me is the great promise for the future as these techniques are further refined and developed.

And Thornton Holder has told you something of how we organize and administer our research activities. This is a vital area and one which is receiving a great deal of attention currently from our top management. We have suf-

fered here from a late and perhaps a hesitant start but from all indications important strides are now being made.

In approaching the question of what we are doing to improve earnings, there seems to us to be one other very important point and that is organizational philosophy. We have a deep-seated belief that the success of any business enterprise depends upon its people. Any respectable organization has access to capital, at varying cost of course, and can make arrangements for raw materials, can hire personnel and proceed into business. But how advantageously this capital is utilized will depend upon the collective abilities of its people. We work hard at Diamond to create a climate or atmosphere designed to bring out the best efforts of our people, to encourage them to produce maximum returns on the capital utilized. We do this in several ways.

First, we divide our business into autonomous divisions headed in each case by a General Manager who has a high degree of decision-making authority and with responsibility all the way through to profits. Each Division General Manager is responsible for production, sales and research in his area and for the growth and development of his product lines. In effect, what we try to do is to create an atmosphere in which the Division General Manager feels that he is running his own business within the framework of Corporate policy, and his progress and success are dependent upon the return, and improvement of return, he is able to achieve on the capital employed.

The Divisions are backed up in specialized areas by our staff departments whose advice and assistance is made available on a competitive basis. Since the General Managers are not required to use or buy the services of our staff departments, and are free to shop around, the atmosphere in which the staff departments operate is one in which these groups recognize that the quality and cost of their services must be competitive with similar services available outside. This has the effect of keeping the staff departments on their toes and, based upon our observation of the results to date, leads to a more effective all-around job.

We claim no originality for this concept because it is well known and widely used, although usually by much larger companies. We believe we have successfully modified and adapted this concept to our situation and, in the four years since its adoption, are greatly encouraged at the progress made. What is more important, we feel that we have just begun to reap tangible benefits and are still gaining momentum.

Another thing we do to create a climate conducive to encouraging maximum effort is to gear as closely as possible our incentive compensation awards to performance. In this way each key employee recognizes that his incentive award is closely related to overall company success as measured by our financial results and to his contribution to such result.

We are working hard to avoid the usual perversion of such plans into what so often become "melon slicing" programs and are determined to preserve the true *incentive* character of our plan.

BROAD STOCK OPTION PLAN

Still another program recently adopted is our broad stock option plan approved by the stockholders last month. Here we are aiming at broader stock ownership by employees at all levels. Our plan is available to hourly as well as salaried people and our objective is to give each employee a stake in Diamond and an interest in its growth and prosperity so as to encourage diligence and industry. We are convinced that there is an enormous untapped reservoir of improved earnings if a way can be found to raise, by even a few percentage points, the interest and desire on the part of the average worker in doing a better job. We are hoping to make headway in this direction by facilitating and encouraging a stock ownership position at all levels.

This then is our many-pronged attack on the problem of improving earnings. Our optimism for the future of the

chemical industry is unbounded and our principal objective is to lay a foundation for growth which is sufficiently broad and solidly based so as to be able to at least keep pace with industry growth. If we project Department of Commerce figures on the production of chemicals ahead to 1965, the total industry production by that time will be valued at about \$48 billion. If we are to only maintain our position in the industry, the same projection applied to Diamond works out to a sales value of about \$250 million by 1965. Actually, based upon the experience of the past 10 years we have exceeded the chemical industry growth by a substantial percentage and it is possible to project on this basis in a perfectly logical way, a Diamond volume of \$350 million by 1965.

Now these figures are not predictions. Rather they are yardsticks to measure future potential. The only prediction we feel safe in making is that we will at least maintain our relative position in the industry. We feel that we have the broadly based product line to do so and, what is equally important, we feel that we have the organization, the people, to do so.

Hooker Electrochemical Company—Progress and Prospects

R. LINDLEY MURRAY

Chairman of the Board, Hooker Electrochemical Company

WE ARE VERY PLEASED to have an opportunity to appear before The National Federation of Financial Analysts Societies on the occasion of its 10th annual convention.

The Development and Funding Company, predecessor of Hooker, was founded in 1903. In 1904 the company started successful experiments in testing an electrolytic process, invented by C. P. Townsend and Elmer Sperry, of Gyroscope fame, which produced chlorine and caustic soda. Our first commercial plant began production at Niagara Falls in 1906. We have since grown from manufacturing only two products—caustic soda and bleaching powder, the form in which chlorine was then sold in commerce—to being an important producer of many basic and intermediate chemicals as well as synthetic resins and plastic molding compounds, all of which serve many industries. Today, caustic soda, chlorine, and hydrogen, the products of the electrolytic cell upon which our company was founded, constitute only about one-third of our total sales.

These basic materials, however, remained our only products until the start of World War I. The war marked our entry into the organic chemical field and saw the start of our first formal research program, a program practically abandoned during the depression of the early Twenties but reinstated in 1929. Of course, research has been expanded greatly during subsequent years.

The Twenties also saw the major part of the transition from bleaching powder to liquid chlorine, and the further development of our manufacturing processes. It was during this period that our S-type cell was developed. This is a very compact and efficient cell now providing about fifty times the output of the original Townsend cell per unit area of floor space. Licensed for use by 32 other companies at 40 locations throughout the world, this type of cell now produces a very substantial part of this nation's chlorine.

Another major development of the Twenties came early in 1929 with the opening of our Tacoma, Wash., plant, the first caustic soda-chlorine plant in the Northwest. The production from that plant has since increased almost 30-fold. Incidentally, by mid-summer we will have completed another caustic soda-chlorine plant at North Vancouver, B. C., which will increase our over-all capacity to about 1050 tons of chlorine a day. We estimate that Hooker's production in this country represents about 10 percent of total United States capacity.

During the late Thirties, our research program began to pay off and by the end of World War II more than a hundred products were being made at our Niagara Falls plant. These included many chlorinated organic compounds made from benzene and toluene, insecticides, extreme pressure lubricant additives, plasticizers, acid chlorides and many others.

During World War II we participated in the Manhattan Project (the atomic bomb program) and the synthetic rubber program, and also produced many other chemicals essential to the war effort.

Today our company has plants at eight locations. At Niagara, prior to two of our three consolidations, there were three plants adjoining one another, now considered as one plant. Other plants are at North Tonawanda, N. Y.; Kenton, Ohio; Montague, Mich.; Columbus, Miss.; Tacoma and Spokane, Wash.; and our nearly-completed one near Vancouver. We employ about 4500 people, 85 percent of them in our Niagara area plants. Until twenty years ago, our company was rather closely held, but today we have more than 8500 stockholders representing almost six-and-a-half million shares.

CURRENT DEVELOPMENTS

Now let us discuss more recent history and current developments.

Our greatest period of growth began with the end of the war in 1945. However, the past two years have been the most dramatic in Hooker's history. During that time we have acquired three local companies, all of which have opened up new markets for expansion and significantly broadened our scope of operations, both product-wise and geographically. While increasing the opportunities ahead for us, it also presents a greater challenge to management, especially in a period of increased competition in the chemical industry.

These three acquisitions have added greatly to the rapid growth which we have experienced over the past 5 years. Since pro forma figures (for the past 6 years) are given in our 1956 Annual Report, copies of which are available here, I will not repeat these now. However, I should like to show you the great change which has occurred in our company over the past five years by comparing 1951 figures with those of 1956. The 1951 figures are for the Hooker Company alone before the three consolidations, while those for 1956 are for the consolidated company. It should be pointed out that 1951 was an excellent year for both sales and earnings. The use of either 1950 or 1952 as the base would have shown even larger growth. Despite this, we chose 1951 since this provides a five-year period of growth.

Our capitalization at the end of fiscal 1951 and 1956 was as follows:

	1951		1956	
Long-term Debt	\$ 3,600,000	11.7%	\$ 36,340,000 ¹	31.4%
Preferred Stock	5,000,000	16.3	5,000,000	4.4
Common Stock and Surplus	21,809,000	72.0	73,797,000	64.2
	\$30,409,000	100.0%	\$115,137,000	100.0%

¹ Reflecting additional \$5,000,000 borrowed December 17, 1956, under a previous loan agreement.

This rapid growth has been brought about in two ways: one, *by acquisition* of established companies; and secondly, *by expansion from within*. Let us look first at our acquisitions—reasons for acquiring, cost, and what we expect to gain.

GROWTH BY ACQUISITION

Our first manufacturing plant acquisition was Durez Plastics & Chemicals, Inc., with plants at North Tonawanda, N. Y., and Kenton, Ohio, in April, 1955. This was accomplished by an exchange of Hooker stock, share for share, for the 1,650,000 shares of Durez stock outstanding.

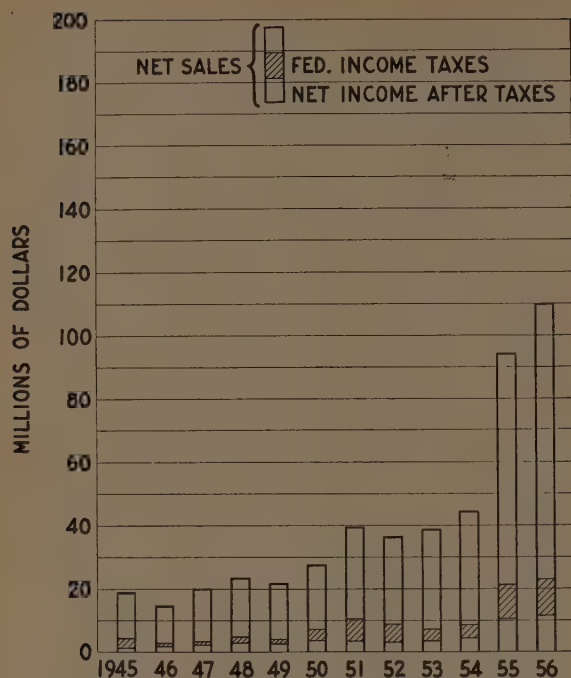
Our second acquisition was the Niagara Alkali Company in November, 1955, acquired also by an exchange of stock—1.6 shares of Hooker for each of the 599,111 shares of outstanding Niagara Alkali stock.

Our latest merger was with the Oldbury Electro-Chemical Co., with plants in Niagara Falls and Columbus, Miss., in November, 1956, by issuance of 450,000 shares of Hooker stock.

There were many reasons for our desire to acquire these companies but our primary one was to provide better balance and further diversification, both productwise and geographically. Other reasons common to all of these consolidations were:

1. To directly increase sales and earnings.
2. To also increase earnings through savings made possible by eliminating duplication of effort and facilities; in brief, by integration. This has been facilitated by the physical nearness of the main plants of the acquired companies.
3. To enhance our competitive position in sales.
4. To permit a larger research program through increased earnings.
5. To acquire men of proven managerial ability.

	1951	1956	% Increase	Chart No.
Sales	\$39,688,000	\$109,980,000	177	1
Earnings before taxes	10,527,000	23,124,000	120	1
Pre-tax spread	27%	21%	-22	
Earnings after taxes	3,577,000	11,497,000	221	1
Shares outstanding Nov. 30	2,914,410	6,458,975	122	2
Net earnings per share	\$1.15	\$1.75	50	2
Net earnings per share, excluding non-recurring earnings	1.15	1.62	41	
Net earnings as percent of sales	9%	10.5%	17	
Gross value of plant and equipment	33,405,000	124,915,000	274	3
Net value of plant and equipment	20,581,000	78,093,000	280	3
Depreciation	1,981,000	7,169,000	262	



There were also other reasons. We had felt for many years that a well-diversified chemical company should have a firm position in the plastics industry. Although we had already made a start in this field with our polyester resins, the opportunity to acquire Durez meant a saving of many years of effort required to establish ourselves in this industry and also ensured a sound, basic and profitable position there. The new, highly-automated Durez plant at Kenton, put into operation a few months after the consolidation, has been a great success from the start and has improved our geographical diversification. Durez is now being operated as a partially integrated division of Hooker.

Our consolidation with Niagara Alkali gave us one of the leading producers in the potash chemical field. It also gave us trichlorethylene, the most widely used metal degreasing agent, and tetrachlorophthalic anhydride for use in plastics, including plastics of our own. Since much of Niagara's production of alkali was sold as caustic potash or carbonate of potash, we also gained additional chlorine production without equivalent caustic soda. Chlorine is vital to our continued expansion in chlorine-containing compounds; insecticides, extreme pressure lubricant additives, HET^(R) acid, Hetron^(R) resins, and various products made by chlorinating benzene, toluene, and other raw materials. Due to these two plants adjoining one another, rapid integration has been possible and was virtually completed by December 1, 1956, the start of our present fiscal year.

Acquisition of Oldbury further increased our diversification. Among other things, we added phosphorus compounds for the match, petroleum, textile, and pharmaceutical industries; the largest producer of chlorates, used for weed-killing, for cotton defoliation, in the rapidly-growing

chlorine dioxide process for bleaching pulp, and in matches and pyrotechnics; oxalic acid for laundry sour, radiator cleaners and other purposes; and perchlorates used in railroad and truck fuses and as an analytical reagent. Oldbury, with its perchlorate know-how, has advised the Government Ordnance Department on production of perchlorates used in rocket propellants for jet-assisted take-off (JATO) for guided missiles and aircraft. Due to control by a British firm, money for expansion had not been readily available to Oldbury. Further expansion and growth in this direction, now definitely in the cards, should contribute materially to our future progress. As with the new Kenton plant of Durez, the new and very successful Oldbury plant at Columbus has also increased our geographic diversification, providing our first foothold and base for further diversification in the rapidly-growing South. Integration of Oldbury is proceeding very rapidly.

Some of the anticipated benefits of these acquisitions have already been realized. Sales have more than doubled, our research budget has been increased 30% over the combined totals spent by the individual companies prior to consolidation, and some saving has already resulted from integration of various functions.

Although much progress has been made to date, much still remains to be done before we realize the full benefit of these assimilations. But we are particularly gratified to note that even with the issuance of slightly more than 3,000,000 shares of stock, an increase of approximately 100%, our original shareholders' equity has not been diluted, as shown by the following tabulation:

	1954	1955	1956
Number of shares	2,962,000*	6,007,000	6,459,000
Book value per share	\$8.71	\$10.06	\$11.42

*Increased by 436,600 shares on December 31, 1954 (in fiscal 1955), due to conversion of 90,944 shares of preferred to common stock.

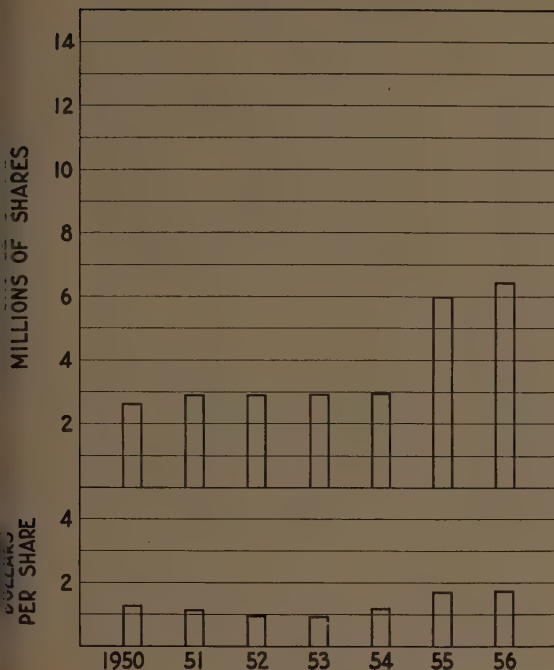
GROWTH FROM WITHIN

Our second type of growth—growth from within—has occurred in two ways: development of new products through research, and construction of new plants to manufacture these and expand capacity for existing products.

1. *New products*—Sales of C-56^(R) (hexachlorocyclopentadiene) have increased tremendously since 1951, having actually quadrupled since 1954, and this chemical is now one of our ten leading products. It is used mainly as an intermediate in the manufacture of important relatively new organic insecticides as well as in polyester resins. The manufacture of C-56 produces large amounts of by-product hydrogen chloride. After purification, this is pipe-lined to Goodrich and Goodyear Chemical Companies for manufacturing polyvinyl chloride. Sales of our anhydrous hydrogen chloride have more than doubled in the last five years.

C-56 is also used in production of our HET acid and HET anhydride, base for our Hetron resins which are finding increased uses for translucent building panels, for automobile parts, boats, and other construction where flame resistance and Hetron's other properties are preferred. Acquisition of Durez has aided this program greatly and

COMMON STOCK EARNINGS II (ADJUSTED FOR SPLITS)



We expect that Hetron resins will soon be among our principal products.

Production of anhydrous ammonia was begun at Tacoma in 1952. This process utilizes the hydrogen formed as a by-product in our manufacture of caustic soda and chlorine. Additional hydrogen is also purchased from a neighboring company. In the Pacific Northwest ammonia is used mainly by the pulp and paper industry and in fertilizers. Sales of this product have tripled in our five years of production in Tacoma.

Many other recent additions to our products list have added materially to our growth in sales. Some of these are: potassium salts, organic and inorganic phosphates, trichloroethylene, phenolic molding compounds tailored to customers' specifications, phenolic varnishes, polyester resins and metal-descaling compounds.

2. *New plants*—During the last five years, a \$72 million expansion program has been underway. The largest single item in this program has been the construction of a \$15 million caustic-chlorine plant at Montague, Mich., which went into production in 1954. Construction for diversification has now increased this figure to \$18 million. Many factors influenced our decision to build at Montague.

a. First, an expansion at some location was necessary to supply the increasing general demand for chlorine, including our own needs.

b. Careful surveys indicated that much of our market could be served more efficiently from a midwest location.

c. The presence of salt from our own brine wells on the property was a major factor.

d. Ample fresh water, power, and labor, plus deep water transportation were other important considerations.

This plant was originally constructed to produce only caustic and chlorine but was designed so that diversification would be easy to accomplish as products were developed. Du Pont has now built a neoprene plant on adjoining property and we are pipe-lining anhydrous hydrogen chloride for this operation, although consumption has not yet reached the expected rate. Most of the HCl gas is being obtained as a by-product from our C-56 plant, completed in 1956, although alternate facilities can produce it directly from hydrogen and chlorine when necessary.

About seven years ago, we began shipping caustic and chlorine in substantial quantities from our Tacoma, Wash., plant to customers in Canada. As early as 1952, it was realized that we should some day construct a Western Canadian plant. Such a plant, costing \$12 million, is now nearing completion at North Vancouver, British Columbia. The principal reasons why we chose this site were:

a. The definite need for a Canadian plant to supply our Canadian customers.

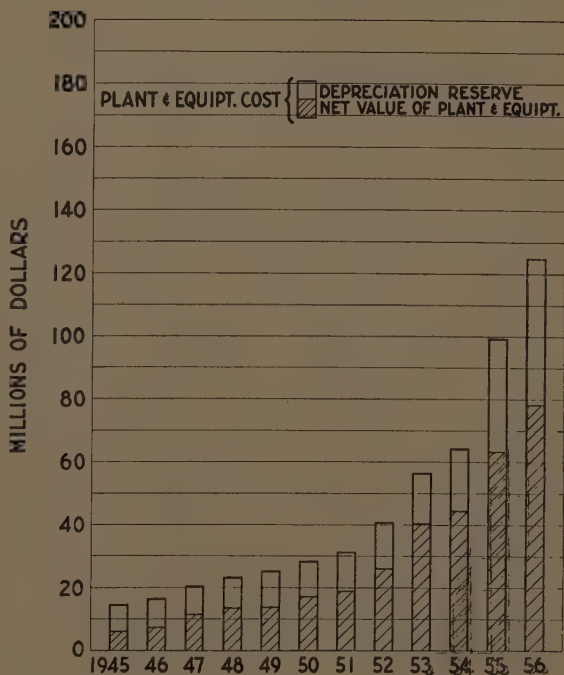
b. The rapid and continued growth of British Columbia augured well for expanding markets.

c. Vancouver offers many advantages; power and labor are available at very favorable rates, and economical transportation by water to other British Columbia ports and to overseas ports is definitely planned. Vancouver is also near enough to our Tacoma plant so that assistance from Tacoma in the design, construction, start-up and operation of the new plant is relatively easy.

We believe we made a good choice in building at Vancouver and look forward to midsummer when this plant will be in operation.

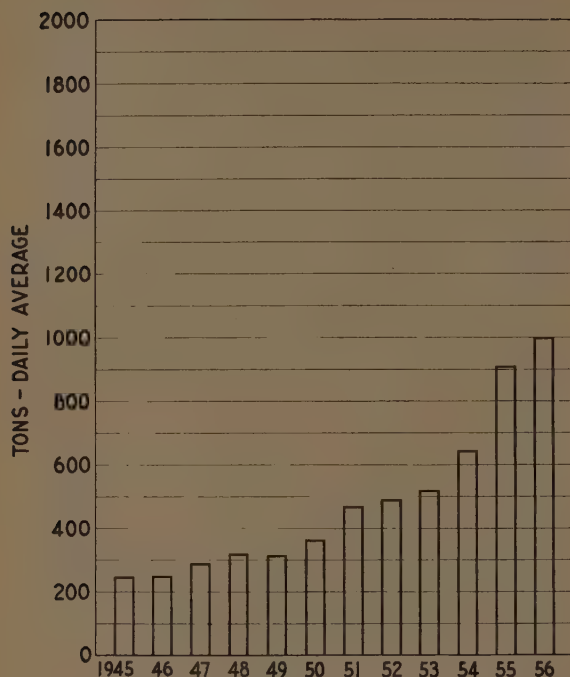
The new plant of Oldbury in Mississippi, and the even

VALUE OF PLANT & EQUIPMENT III



CAUSTIC SODA OUTPUT

IV



newer plant of Durez in Ohio, both of which have already been mentioned, have added substantially to our growth over the past five years. As a matter of fact, within the last two months we have announced a further important expansion of sodium chlorate capacity at Columbus.

The foregoing review has pointed out our past progress. How about the future.

In our 1956 Annual Report, we made the following statement:

"We, along with other chemical manufacturers, are having difficulty in maintaining our profit margins due to the gradual increase in cost of purchased raw materials and supplies, higher wages and salaries and, in our case, to the increased cost of power at Niagara Falls resulting from the rock-slide destruction of the Schoellkopf power station, and to substantially increased pension costs. Competition is increasing in the chemical industry and it is becoming more and more difficult to pass on increased costs by raising selling prices. Our organization is making a determined effort, through increased productivity and through a comprehensive cost reduction program, to realize savings which will at least partially offset the pressure of this cost-price squeeze."

All of these increases, together with higher depreciation charges and at least five non-recurring expenses, cost us about 25 cents a share in 1956 vs 1955 after giving credit to higher gross sales due to increased prices during the year. It now appears that the corresponding figure for 1957 vs 1956 will be around 20 cents a share.

Our first quarter statement showed earnings of 33.1 cents per share as compared to 45.9 cents per share, including 4.0 cents non-recurring profit for the same quarter a year ago. As stated in this report, sales for the first quarter were

slightly less than sales during the same period in 1956, due largely to customers' production curtailment and inventory reductions in some of the industries we serve. The pick-up has not developed as much or as soon as we had expected but we now believe that our actual sales for the year 1957 will show a small increase over 1956.

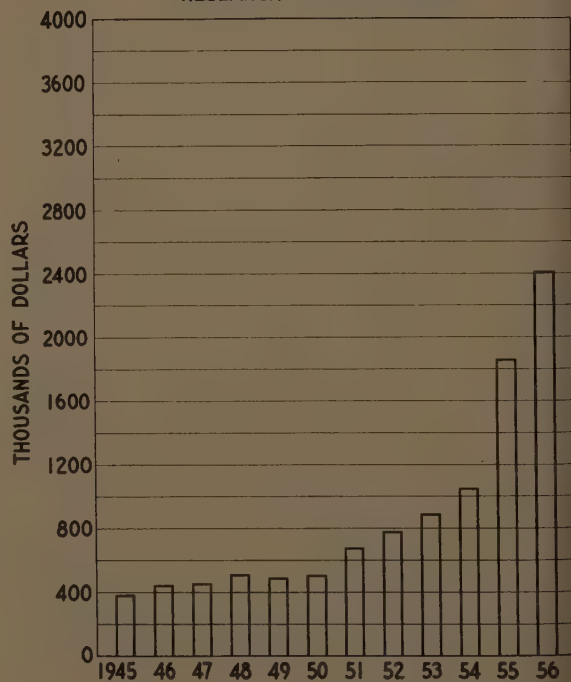
We know that prices of purchased raw materials and supplies, and wage and salary rates are likely to continue their upward trend as long as inflation is with us. High-cost power is certainly going to remain with us at Niagara until the huge new power development at nearby Lewiston becomes an actuality some four or five years hence. When this new hydro power is available, we hope to be able to buy power at a much more reasonable rate than we now pay.

As a result of this cost-price squeeze, we have launched the most concerted company-wide cost reduction and savings campaign we have ever undertaken. It is very gratifying to our management to see how whole-heartedly our entire organization has pitched into this campaign. Following a great many meetings between management and the heads and supervisors of all our departments and plants, this whole program was, for example, presented to 235 foremen, supervisors, and department heads at our monthly supervisors' and foremen's meeting at Niagara in late February. Our president, executive vice president, comptroller, and chairman of the board presented the whole situation with complete frankness and we now have endorsement and a pledge of 100% support in our program to reduce annual costs by several million dollars a year.

I want to emphasize that this cost reduction program is

ANNUAL EXPENDITURES RESEARCH & DEVELOPMENT

V



not confined to production departments. Every aspect of our business is included—Administration, Offices, Accounting, Purchasing, Industrial and Public Relations, Research and Development, and Engineering. We have recently established a Methods Department and have now gone far enough to know that changes in this area will enable us to make a substantial reduction in our clerical staff. Also, after having initiated a partially-revised budgeting procedure last year, we are now on a completely revised budgeted basis from here on.

We are all very serious about this cost reduction and savings program. It requires and will receive constant follow-up. We are not satisfied, at least over the long pull ahead, to see our earnings per share decline; in fact, we are determined to have them do just the opposite.

LONG RANGE PLANNING

Enough for 1957! What lies beyond? We realize, as I am sure each of you do, that any company, and particularly a growing company, must look and plan more than one year ahead. We are, therefore, devoting a lot of time and effort to long-range planning. This has included a detailed study of our projected capital expenditures and specific plans to ensure our continued growth. I shall now elaborate somewhat on these activities.

1. *Capital expenditures*—Careful analysis of our capital expenditures over the next five years indicates that we will spend \$15 million or more per year. Approximately 80% of this will be spent to increase our production, our sales, and to effect savings, all of which will increase earnings. The remainder will be spent on improvements so we can offer better products and better service to customers. We believe that this will lead indirectly to some increase in sales.

Expenditures will be divided among our several plants approximately as follows:

Niagara	40%
Durez (two plants)	22%
Oldbury (two plants)	12%
Montague	12%
Tacoma	2%
North Vancouver	12%

A large portion of these expenditures will serve to increase our capacity for basic products—caustic soda, potash, chlorine, phosphates, and chlorates at various locations. A substantial amount of the increased production will be used internally and will provide a firm position upon which to base further diversification.

Some major items included in our program ahead not contributing directly to increased production are: a new research center, air and water pollution control, improved warehousing, offices, and expanded services such as steam, water, sewers, etc.

We expect that most of the projects in this program will be financed by retained earnings and depreciation accruals. No new financing is presently planned for 1957.

2. *Plans to ensure continued growth*—We can ensure continued growth in both sales and earnings in three ways:

(a) improve quality and reduce costs so as to maintain and hopefully increase our share of the market; (b) develop new and more profitable products through research; and (c) expand into new fields. Let me outline briefly what we are doing in each of these respects.

(a) *Improve quality and reduce costs*—Besides our regular research department, we have at virtually all of our plants Process Study groups who are doing process improvement or development work on existing processes. They continually try to improve these processes—increase output, improve efficiency, reduce labor, improve quality, and reduce costs in every possible way.

An appreciable cost item is represented by money tied up in inventories. Our Inventory Control Committee meets frequently and regularly to review and keep our inventories within carefully established limits.

(b) *Development of new products through research*—Since new products usually enjoy a wider margin of profit for some time, at least, development of such products through research is perhaps the most effective way of increasing return on sales. As mentioned, our research budget has been increased about 30% over the total spent by all of our merged companies before acquisition. This expanded budget has permitted us to improve our facilities and to increase the number and caliber of our men. Our facilities will be further improved with the construction of a new research center on Grand Island, only five minutes from our headquarters at Niagara. This is now in the active planning stage.

Another recent move which will materially strengthen our research department is the consolidation of all research and development (Durez, Niagara, and Oldbury) under Dr. E. L. Whitford, former president of Oldbury. This will ensure better over-all balance in our research program, better utilization of manpower through assignment of projects to the group best capable of carrying them out, avoid duplication, and improve the over-all productivity of this department.

We have pledged \$50,000 toward construction of a nuclear research center at the University of Buffalo. Construction on this project is expected to start this summer and may be finished by 1959. Our program for using this center is not yet fully developed—we are sifting many ideas and feel confident that this new research tool cannot fail to favorably affect the growth of our company in the foreseeable future.

Other things which will affect our future growth, many of which are now in the research or development stage, include the following:

A new selective herbicide, based upon one of our regular products, for controlling broad-leaf weeds, bindweed and quack grass among corn and small grains looks very encouraging. New and improved lubricant additives look promising, one having now reached commercial stage. We can now foresee commercialization for our flame-resistant rigid polyurethane foams for insulation. Still in the experimental stage is the use of various organo-phosphorus compounds in flame-proofing cotton and other cellulosic materials. These are of particular interest for treating materials used by the

armed forces. Alkyl phosphate esters are showing promise in a number of uses as varied as textiles and ore extraction. Light-colored polyester molding compounds, glass-filled molding compounds, and other resins now in the advanced experimental stage, are expected to increase sales substantially with only very moderate capital expenditures.

(c) *Expansion into new fields*—The primary function of our General Development Department is to evaluate future market needs, fields for expansion, and to advise when new products or new locations may be desirable in order to exploit these new or expanding markets. This group therefore makes long-range market and economic surveys, studies raw material supplies and their bearing upon existing plants and prospective new ones, helps evaluate the desirability of acquiring established companies and, in general, assists management in long-range planning. This department has been of great assistance to management and it is now being expanded.

SALES

We realize that even though we do all these things, our work will have been fruitless unless we can sell our products. A great deal of work has been done during the past few months in strengthening and expanding our sales force, and in integrating Oldbury sales personnel into our sales department.

We are glad to say that we have obtained some excellent sales personnel through our three mergers. Our organizational plans have been worked out and recently put into effect to fully utilize all these men. C. A. Stiegman, formerly vice president and technical director of Oldbury, was made director of product development early this year.

Fairly recently, separate Hooker, Niagara Alkali, and Durez sales offices in New York City have been combined into a single sales office in the Lincoln Building, and we will shortly bring the Oldbury sales personnel there as well. We have housed together the Chicago as well as the Los Angeles sales offices of Hooker and Durez for better efficiency. Additional new sales offices have been established at Philadelphia, Worcester, Mass., and Vancouver, B. C.

In addition, sales methods and procedures are being studied and simplified and we now have a much stronger sales force than six months ago.

MANAGEMENT — PRESENT AND FUTURE

We believe the matters which I have been discussing provide a sound basis for continued and profitable growth. One thing more which I have not mentioned heretofore is a devoted and able management team, capable of bringing these plans to fruition.

About two years ago, I was made chairman of the board, Bjarne Klaussen became president, and shortly thereafter, Tom Moffitt became executive vice president. One of our most important functions has been to build a young and strong management team. Much progress has been made and I can tell you now that we have able men to take our

places when Klaussen and I retire in a couple of years. The fact that the average age of the top men in each of our eight plants is now only 36 years, the youngest works manager being 32 and the oldest being 43, is eloquent proof that we are making real progress along this line.

Two of our most promising younger men are Len Bryant and Tom Willers, both of whom are here today. We have just elected Len Bryant a vice president of the company and placed him in charge of production in all our plants. Tom Willers was appointed comptroller about six years ago and we have recently also made him assistant treasurer and greatly broadened his responsibilities. These two young men are carrying a very real share of the load. Our chief engineer, appointed about six years ago, is now only 44. These three men have as their principal assistants a dozen or more younger men who show much promise.

We have recently made some important additional organizational moves. Frank W. Dennis, vice president in charge of industrial relations, who is more responsible than any other one person for our long record of peaceful and happy industrial relations, has recently been made a director of the company and his title changed to vice president in recognition of broader responsibilities. H. B. Young, formerly vice president in charge of eastern production, has been made vice president and an active member of our top management staff. He has taken over many responsibilities formerly handled by vice president J. H. Babcock, who retired on May 1st. Dr. M. B. Geiger, formerly executive vice president of Oldbury, has just been made director of general development, thus strengthening this very important phase of our business. Donald L. Taylor continues as manager of general development in which position he has made a real contribution to the growth of the company.

John F. Snyder, formerly vice president of Durez, and Dr. Earl L. Whitford, formerly president of Oldbury, have each become vice presidents and directors of the company. The former is in charge of financial matters and, as mentioned previously, Dr. Whitford has been put in charge of all research and development on a company-wide basis.

We have also acquired some first-class men in the lower middle-age group as a result of our recent mergers. These men are now filling important positions on a company-wide basis and should go far in our expanded company.

CONCLUSION

These are our plans. We realize that we will bear fruit only if we have a team capable of executing them. We believe we have that team: *Research* to develop new products; *Operations* to manufacture these as well as existing materials at competitive costs; *Sales* to sell in amounts and at prices satisfactory to our customers, and at the same time permit us reasonable profits; and *Management* to furnish the leadership and direction necessary to ensure a smooth-functioning unit. On this basis, we are confident that the Hooker Company will continue to grow and prosper over the years to come.



FOOD

another multi-billion-dollar industry
served by **KOPPERS**

Today, Americans are buying about 50 per cent more food products in terms of quality, quantity, and packaging convenience than in 1939. Our "standard of eating" is expected to continue improving, so that by 1965, the United States will need an estimated 100 billion dollars worth of food. Products of Koppers help the food industry to satisfy the demand of today and to prepare for tomorrow.

Koppers Niacin, an important B-complex vitamin, enriches such foods as bread, macaroni, corn meal, and rice. Another Koppers Chemical, BHT, protects lard, cooking oils, and other fatty foods from turning rancid—

helping to cut the cost of spoilage in such products.

Koppers Plastics are being widely used to make more attractive, economical and convenient packages for a variety of food products. DURETHENE® polyethylene film provides a clear, tear-resistant wrap—ideal for both frozen foods and fresh vegetables. DYLENE® polystyrene is used to make disposable containers for dairy products, boxes for fresh fruits and baskets for berries.

The food industry is just another of the multi-billion-dollar industries served by Koppers. And, as these industries grow, Koppers will continue to grow. Koppers Company, Inc., Pittsburgh 19, Pennsylvania.

Producers of chemicals, plastics, tar products, wood preserving materials, treated wood, metal products, and dyestuffs. Designers and builders of steel mills, coke ovens, and chemical plants.



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Silicon of this new high purity was perfected by Texas Instruments as part of its semiconductor research and

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Entrance into basic materials production is another new venture in the Texas Instruments policy of pioneering. This dynamic approach has brought TI to world leadership in oil exploration and the manufacture of instruments, optics, and electronic components and systems.

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OIL FORUM

An Evaluation of the Problems and Potentialities of Refining and Marketing

C. E. SPAHR, *Executive Vice President,
The Standard Oil Company (Ohio)*

TWO BASIC CHARACTERISTICS of the market for petroleum products should be remembered when you consider the impact of refining and marketing on industry profits.

The first is consistent growth in demand for petroleum products. That growth is expected to continue for the foreseeable future. We believe the rate of growth will be about 4 or 4½ per cent per year.

The second characteristic is that refiners and marketers must anticipate needs for petroleum products long before the market for those products actually materializes. For example, the types of gasolines and lubricants for motor cars that will be made four or five years from now must be anticipated in order that refinery facilities required to satisfy their needs can be constructed. This requires close liaison with automobile manufacturers. Furthermore, the oil industry must anticipate the needs of other petroleum-powered machines that are not yet on the market.

The refiner must also anticipate the relative volumes of the several types of products that will be produced in the future.

I do not mean to imply that the refining and marketing segments of the oil industry are faced with a problem that is different from that of many other industries. My point is simply that this problem is far more significant to refining and marketing than it is to the oil production segment of the petroleum industry.

This characteristic, this need to anticipate the future, represents an additional force to keep oil industry managements aggressive and alert and compels those managements to make effective use of modern tools and techniques.

The terms "automation," "operations research," and "data processing equipment" are familiar to you. They are perhaps overworked and may mean different things to different people. Nevertheless, they do represent a modern technique that can be of tremendous importance to refining and marketing.

The use of high-speed electronic data processing machines is particularly appropriate for refining problems that have previously defied prompt analysis, where the surface has barely been scratched in the use of advanced mathematical approaches. These machines are being used within the

oil industry to solve complicated problems with many variables—problems such as the evaluation of various types of crude oils under various operating conditions, optimum design characteristics for refinery facilities and tankage, etc. At Sohio, for example, we acquired an IBM 650 electronic data processing machine to be used principally for accounting work. Now it is being operated on a two-shift basis, with 80 per cent of the work being concerned with engineering and refining problems. In fact, I was told a few days ago that the only work that the men who operate this machine give precedence over engineering problems is the processing of the payroll. This type of equipment can also be helpful in the analysis of marketing trends.

Although some characteristics are common to both refining and marketing and many techniques can be utilized by both functions, it might be helpful to examine each function separately.

REFINING

I occasionally hear comments from analysts indicating they feel the refining function is in a precarious position, squeezed between two forces. One is the pressure of rising crude oil prices; the other is the highly competitive and highly volatile wholesale price structure for finished products. The belief seems to be that raw material prices will continue to climb, but finished product prices cannot be expected to keep pace; therefore—according to this viewpoint—the refiner is squeezed, his margin is decreasing, and there is little he can do about it.

I believe it is likely that many of you hold this opinion. Let us examine it in more detail.

First, let us talk about the cost of crude oil—the raw material for the refinery. Practically everything published about crude oil prices refers to the price at the well. Well prices of crude oil advanced recently. I do not expect any general decline in prices at the well. However, it is not the well price of crude oil that is important to the refiner. It is the cost of that crude oil delivered to the refinery. While well costs of crude oil have gone up, transportation costs have gone down. The reduction in transportation costs has been achieved principally by the construction of many modern, large-diameter pipelines that can transport large volumes of crude oil economically. The availability

of these pipelines—not just to the companies that initiated their building but to other companies that wish to ship crude oil to the refineries—makes possible more effective selection of crude oil from various geographical areas to minimize transportation costs.

DIFFERENT REFINING VALUES

Another factor of importance is that different types of crude oil have different refining values. Lower value crudes can be purchased at lower prices. The use of these lower value crudes requires special refinery design and some additional capital costs. It, of course, requires a calculation of the balance between lower crude costs and the lower product value resulting from processing that crude. Modern refineries are contributing more and more in improved processing techniques to minimize the loss in product value when lower value crudes are used.

These factors are important. I suggest to you that the analysis of crude oil well prices does not constitute an adequate analysis of the cost of crude oil to refiners.

To discuss the pressure upon refiners from finished product prices—the squeeze that results when product prices do not keep pace with raw material costs—is to discuss one of the most complex problems in the petroleum industry. Let me merely point out at this time that refinery wholesale petroleum product prices differ considerably in various sections of the country. Price relationships between different products vary. In fact, it is unsafe to generalize about wholesale petroleum product prices. The only generalization that is wholly true is that any generalization about product prices is bound to be partly untrue.

There is one element that has an impact upon prices that I must mention. That element is the relationship of petroleum product inventories to demand. There are regulatory bodies in the various states that determine the quantity of crude oil that can be taken out of the ground, but there are no such bodies that determine the quantities of various petroleum products that can be made at refineries. Each company normally desires to refine and sell an increasing quantity of petroleum products, with one of the reasons being the reduced unit costs which are likely to result from increased throughput. When a refiner accumulates more products than he can expect to sell through his normal distribution channels, he endeavors to sell that excess quantity in the unbranded market. When a large number of refiners endeavor to dispose of their excess supply in the unbranded market, the normal and natural result is price weakening and price decreases. This type of adjustment is one which must not be eliminated from the economic system in which we operate. It is not only natural but proper that prices should fluctuate with supply and demand.

CAN OIL COMPANIES EXERCISE SELF-RESTRAINT?

The real question is whether oil companies individually can voluntarily exercise the self-restraint and good business judgment necessary to prevent the accumulation of inventories so large that product prices are forced down and earnings jeopardized. My own observation is that there is an increasing number of individual corporate managements that recognize the importance to themselves, to the

industry, and to our economy of watching inventory levels carefully and planning refinery production judiciously.

Consider the allegation that there is very little a refiner can do to avoid the reduction in his refinery margin resulting from the pressures of increased raw material costs and less rapidly increasing finished product prices. Something can be done! Actually a great deal has been done. There have been important strides in the use of alternative refinery fuels, preventive maintenance, and minimization of refinery down time. Completely integrated refineries are being built to produce higher quality products at decreased unit costs. I have already mentioned automation, which is becoming increasingly important in refinery operations. These are only a few of the things being done.

It is interesting to note the success with which oil companies have avoided the added cost burden that would result from operating refineries substantially below capacity. According to Bureau of Mines figures, domestic refinery throughput has averaged 87% of capacity since 1946, but the range has been from a low of 81% in 1949 to a high of 92% in 1951. Throughput last year was 90% of capacity. Throughput in 1957 is expected to again approximate 90% of capacity. Achieving 90% of capacity is particularly noteworthy when it is recognized that during this period the industry, cooperating with the Government, increased refinery capacity to meet indicated requirements for national defense and national security.

Another way of offsetting the squeeze between raw material costs and product prices is to get more valuable products from each barrel of crude oil. Technological advances have made it possible to obtain more gasoline and other light products and a lower proportion of residuals from each barrel of crude oil. Of course, the yield of various types of products depends upon the type of crude oil processed; however, each time a new refinery is designed, completed, and placed in operation, new processes become available to increase the yield of higher value products.

Technological advances make it possible to get more gasoline out of each barrel of crude oil and they also afford opportunities for finding new uses for materials that can be made from crude oil. Probably the first real move toward today's petrochemical industry began when the first petroleum molecules were cracked and reassembled as improved gasoline stocks. Petrochemical manufacturing, in the sense we use the term today, is another form of upgrading product value. The techniques in the petrochemical field involve the ability to take molecules apart and reassemble them. The refining segment of the petroleum industry acquired this ability years ago to meet day-to-day requirements.

I have discussed refinery problems at some length because the refining function receives less publicity and attention than the crude oil production function, and misconceptions about the refining function are more likely to exist. Let me restate the points I have made about refining:

1st—The refining function is generally believed to be in a squeeze. One jaw of the vise is increasing raw material cost. The other jaw of the vise is less rapidly increasing wholesale product prices.

2nd—I do not deny there is a squeeze, but I do maintain

that the contributing forces to that squeeze deserve more than a superficial analysis.

3rd—The well price of crude oil is not one jaw of the vise. The cost of crude oil delivered to the refinery is a concept quite different from the highly publicized well cost. Other factors are involved in the determination of delivered cost, and the benefits in recent years from improved transportation techniques have sometimes been overlooked.

4th—Wholesale price movements are complex, and it is unsafe to generalize.

5th—Even though a refiner is faced with pressures from two directions, those pressures are not much different from the ones faced by many other industries. Moreover, there are things that he can do about the situation. In fact, refiners have already done a great deal and have prevented their margin from being reduced. An alert and aggressive refiner using modern techniques can not only hold his own with other functions in the petroleum industry but can substantially improve his position.

6th—The refining function is definitely not a weak sister among the functions in the integrated petroleum industry. Its importance has always been recognized, but its financial strength has too long been under-rated.

MARKETING

The marketing function faces virtually the same situation as the refining function. The marketer's margin is limited on the one hand by the price he must pay the refiner, and, on the other, by the price he can charge the customer. Consequently, much of the attention of the marketing function is directed toward increasing profits by keeping marketing unit costs at a minimum. In the marketing function there is a need for increased volume so that unit costs can be kept low, similar to the compulsion for high volume operations that exists for refiners. In some instances increases in volume do not help unit costs a bit. The rental for stations on some state turnpikes is based upon gallonage sold at the station. Increased effort to obtain increased volume at these stations inures more to the benefit of the state than it does to the oil company.

The marketer's attention continues to be directed to cutting costs by using modern and efficient facilities and techniques. The capital expenditures being made by the marketing segment of the industry are for larger and more efficient terminals, trucks with greater carrying capacity, and new retail outlets. As individual companies obtain increased volume within a given market area, terminals can be located more advantageously, and the length of haul from the terminal to consumers and resellers can be reduced. Frequently secondary bulk plants can be bypassed. Cost of unloading, storing, and reloading can be minimized. You have no doubt noted the increasing frequency with which the publicity releases and annual reports of integrated oil companies call attention to the capital expenditures made to improve this day-to-day, bread-and-butter part of the industry operation.

As labor costs grow, efforts to obtain the benefits of modern efficient facilities become more and more important. Consequently, sound standards and good judgment in using capital funds effectively become more important.

IMPORTANCE OF PRODUCT PIPELINES

Product pipelines are an extremely important factor in keeping distribution costs at a minimum. Crude lines, of course, play an important part in reducing the delivered cost of crude oil to refineries. Product pipelines play the same role in reducing the cost of moving products from the refinery to the consumer. Of the two types of pipelines, crude and product, product pipeline mileage is increasing more rapidly in the United States.

There are many facets to the marketing function beyond the need for reducing costs, and, in some ways, the future problems of the marketing function are more intriguing to me than some of those of the production function. This morning I intend to limit this discussion to three of those problems.

The first problem is that of multigrade gasoline. The multigrade question actually involves both refining and marketing questions. As you know, some companies have introduced a special high-quality premium gasoline as a third grade in addition to their two regular grades. One company has experimented with blending gasolines at the pump so that any one of five different grades can be prepared for the motorist. Most companies have thus far decided to sell only two grades of gasoline.

Each approach represents the individual company's judgment of how it can best satisfy customers' needs for gasoline with constantly increasing octane rating, taking into consideration competitive circumstances and the relative costs of the different approaches.

The phrase "constantly increasing octane rating" is the key to the problem. Newer motor cars require gasolines with higher octane ratings than do cars of earlier vintage. Certain high-priced cars require especially high octane rated gasolines. Inevitably, two further things are going to happen:

1. The octane requirements of motor cars on the road during the next few years will increase—simply because older cars will be discarded and new cars added to the car population.
2. Motor cars manufactured in the next few years will require gasolines with higher octane ratings than required by 1957 cars.

Thus there is, in a sense, a doubly-strong tendency toward still higher octanes. Manufacturing high octane gasoline is costly. To refine crude oil into high octane gasoline most efficiently requires special refinery facilities and special refinery blending operations. It is important for each company to determine in its best judgment what its long-term course should be. That, in turn, depends upon what refining facilities it has or contemplates having, what it believes competitors will do, and—most important—what it believes consumers want. It is just as true in the oil industry as in other industries that "what customers want" is not necessarily synonymous with "what customers need."

GRADES OF GASOLINE

Theoretically, a good case can be made for three grades of gasoline. It is no secret that most companies have studied the advantages and disadvantages of going to three

grades nor that they are continuing to stay alert to developments. A policy that is right today may be wrong a year from today, and flexibility is important. What course ultimately should be followed will depend upon decisions made by the final judge, the customer.

The second problem that faces marketing is the threat of unwise and unsound legislation. I do not wish to get into the technicalities of this legislation now. During the course of the day more will probably be said about it, or at least you will be furnished with some material related to it. Let me merely say that one of the legislative proposals is an attempt to force a modification of the present relationship between suppliers and jobbers and between suppliers and dealers. Another proposal represents an attempt to force a modification of the present freedom to price within the competitive framework of existing anti-trust laws. A convincing case can readily be made that the proposed legislation is contrary to the welfare of the dealer, the supplier, the consumer, and the investor in the oil industry.

As the oil industry continues to play an important role in our society, investigations and proposals for further revisions and restrictions imposed by law will probably continue. I suspect that the oil industry has done an inadequate public relations job. Actually it has fulfilled the needs of the economy without increasing prices as much as prices of other commodities have been increased. At the same time, it has substantially improved the quality of its products and its service to consumers. The reward has been growth for the industry, higher wages for employees, and higher returns for investors.

The third problem that the marketing function of the industry faces is the problem of toll roads and limited access highways. The 1956 Federal Aid Highway Act calls for a thirteen-year construction program which will result in a superhighway network of 41,000 miles. This program should provide space for the increasing number of vehicles and should make traveling by highway more pleasant. Furthermore, it ought to increase the sales of gasoline.

For the oil industry the critical factor is that products and service will not be readily available on these roads. At the present time, business is excluded from these roads by law, but public pressure may demand some form of solution which provides products and service on these new highways. We believe that today's toll road philosophy, with station rentals set at rates which exceed economic limits for profitable operation, should not be extended to these new highways. That toll road philosophy has the same effect upon the oil industry as a price war, but it does not provide the short-term benefit to the consumer that a price war might provide. I believe that we are beginning to see some evidence of voluntary self-restraint and good business judgment in regard to inventories and refinery production levels. Unfortunately, there are few indications thus far that the oil industry will show similar maturity in its approach to the problem of toll roads. Unless there is a more enlightened general approach by oil companies and by the governmental authorities, the result will be a contin-

uation of fierce competition to obtain exclusive toll road locations which turn out to be loss operations.

An additional aspect of this problem is that the industry will be faced with adjustments in gallonage through existing retail stations and the closing of others as the traffic pattern readjusts to the new highway system. Those companies which make their plans for site relocation early and on a sound basis will be the ones that will be in the best position in the years to come.

CONCLUSION

While there are many problems ahead for both refining and marketing, the oil industry has a remarkable record for problem solving in these areas. If the capital dollars and the manhours of effort spent on domestic production become less rewarding, oil industry management will look to refining and marketing for an increasing percentage of over-all profits. These increased profits can materialize. Many integrated refiners have grown and prospered on the basis of their refining and marketing operations. Sohio is one example. There is no reason why they should not continue to do so.

The refining and marketing segments of the industry must continue to serve customers effectively and prices must remain low enough to result in the largest possible market and yet realistic enough to result in continuing financial health for the oil industry. Foresight and intelligent planning will always be required. As the managements of integrated oil companies increase the alertness with which they watch for, and the vigor with which they tackle refining and marketing problems, increased profits from these two functions should make already good investments in the integrated companies of the oil industry still better.

YALE & TOWNE

Declares 277th Dividend

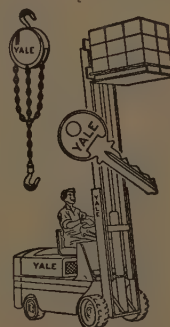
37½¢ a Share

On May 23, 1957, dividend No. 277 of thirty-seven and one-half cents per share was declared by the Board of Directors out of past earnings, payable on July 1, 1957, to stockholders of record at the close of business June 7, 1957.

F. DUNNING

Executive Vice-President and Secretary

THE YALE & TOWNE MANUFACTURING CO.
Cash dividends paid in every year since 1899



Sohio's Current Position and Outlook

A. E. WOLF

Financial Vice President, The Standard Oil Company (Ohio)

SOHIO IS AN INTEGRATED OIL COMPANY engaged in all branches of the oil industry and in petrochemicals as well. Among integrated companies Sohio is an unusual company, and perhaps even a unique company. Unlike most integrated companies, the major portion of our profits comes from refining and marketing activities, with a relatively small contribution to net income from the production function. Of course, there are reasons for this situation, some of which I will discuss a bit later. The significant point for the analyst is the large item of raw material cost which results from the smaller than average degree of integration through crude oil production.

In 1956, approximately one-third of all of our direct operating costs represented the cost of crude oil purchased from others for which we paid the posted well price. This cost item aggregated about \$100 million. The size of this item provides us with a very substantial cost figure to work against with our own production efforts, and in contrast, a relatively smaller item of current production of our own to replace. This is an important consideration when appraising the prospects for earnings growth under conditions of current costs of finding and producing new reserves of crude oil.

OUR CURRENT POSITION AND OUTLOOK

Our sales and operating revenues consist of sales of petroleum products, TBA items, natural gas and natural gas liquids, and petrochemicals. There are a few additional sales revenue items which are not important in total. Last year our dollar volume of sales and operating revenue was \$366 million, or just about a daily average of \$1 million. In 1957 we are expecting a gain of about 8 to 10% in that figure. About one-half of this expected gain will come from increased volume of products sold. The other half will come from higher realized prices for the products sold. It should be noted, however, that all of the gain in realized price is not a result of price increase. Part of it comes from a greater proportion of higher priced products or higher priced channels of distribution. Also, as you are well aware, the price increase component in petroleum products during 1957 includes not only the increases made in January of this year, when crude oil prices went up, but also increases made during the calendar year 1956 at various times and in various products.

For the first quarter of 1957 we reported a gain in sales and operating revenue of 12% over last year, while our volume of goods sold was up 3%. For the balance of this year, therefore, we are expecting volume comparisons with a year ago to be somewhat better and the price element to be less of a factor than it was during the first quarter. The price element may be further affected by price weakness in

some products as a result of the product inventory position of the industry, the failure of demand to come up to expectations, both in distillate oils during the winter months and gasoline in the spring months, and the strong competitive forces at work in the market place.

We expect to improve on last year's earnings results. However, the rate of improvement for the full year will not continue the 20% gain in net income which was reported for the first quarter. There are several reasons why this rate of gain will not be continued in addition to the price and volume factors which I have already mentioned. Costs, other than raw material costs which went up in January, are increasing during 1957 to date without offsetting increases in prices of products. At the present time the industry is granting wage increases to its employees, which will add from 5 to 6% to the wage bill for most of the last nine months of the year. Material and service costs have gone up as a result of price increases in other industries. Competition in quality of goods and services furnished to customers is adding costs which thus far have not been reflected in price. Despite these adverse factors, we expect to have a gain in earnings resulting in part from the increase in capital funds employed throughout all of our operations.

In order to discuss some of our important developments which will have a bearing on results for this year and on prospects for next year and beyond, I shall cover the major items of our proposed capital expenditure program for 1957. This program, calling for the investment of approximately \$70 million in new plants and facilities throughout our operations, will be by far the largest program of any single year in the company's history. It represents an increase of approximately 40% over the 1956 capital expenditures. The figures must be considered as approximate indications for the calendar year since some plans will undoubtedly change due to external influences, and we are also never certain early in the year exactly how much of each individual project will be recorded by the time the accountants close their books on December 31.

EXPENDITURES IN REFINING FACILITIES

More than half of our capital expenditures this year will be in refining facilities. Our total forecast expenditures in this department will approximate \$39 million, of which about \$29 million will be spent at Toledo where we are well underway on construction of new refinery units. The total cost of these units is estimated at \$40 million with a crude capacity of 60,000 barrels per stream day. The indicated relationship of investment to crude capacity is an important factor in judging future profitability on these new facilities. Our other refinery installations in the Ohio area and our inter-connecting pipeline system provide us with advantages of location which permit design factors that reduce capital cost. We expect that these advantages

will result in lower operating costs as well. The new facilities will be available during the latter part of 1958, at which time we will shut down some of our older present facilities.

The location at Toledo also has some promising advantages for the future. Not only is Toledo a terminus point for large diameter crude oil pipelines from the mid-continent and southwest, but it is also within accessible distance of the Canadian pipelines transporting western Canada crudes to the eastern provinces. In a few years it will also have available the facilities of the St. Lawrence Seaway, should that outlet to the sea become an important factor for petroleum transportation.

While the new Toledo facilities have received greatest attention because of their size, we are continuing our program of growth and expansion in other refining facilities. Typical is a new alkylation unit under construction at our Cleveland refinery, which will be an addition to our present alkylation capacity now all located at Toledo. We are alert to opportunities to reduce refining costs through application of new techniques and replacements with new equipment which provide cost savings or product yield improvement. Our program for 1957 includes approximately \$10 million of refinery projects other than the Toledo refining facilities. This compares with about \$7½ million average annual expenditure on refining facilities during the past five years.

New investments in marketing facilities during 1957 will approximate \$10 million, compared with about \$7½ million average annual expenditure for the past five years. A large part of the increase will be for new service station construction and acquisition in order to keep pace with the growth of the Ohio market. An interesting comment on this growth appeared in the annual report of the Federal Reserve Bank of Cleveland, which stated, "The richness of variety as well as the magnitude of the industrial expansion in the Fourth Federal Reserve District has probably not yet been fully realized by all members of the nation's business community, let alone by the public at large."

The expansion in this State is not only in Ohio's traditional industries but also in new industries bringing their growth and expansion plans to Ohio. The automobile assembly operations of the big three automobile manufacturers is a good example of this new trend. Since the end of World War II, these automobile manufacturers have established 18 new large plants in the State of Ohio and are currently constructing 4 more, with a 5th on the planning board. Those already completed have added more than 100,000 new employees in the State of Ohio just in this industry alone. Another example is the industrial complex now under construction on the Ohio River at Clarington, which will represent a total investment of some \$300 million. This will include a coal company, a chemical company, an aluminum company, an electric power utility, an oil company, and a ferro alloy producer. Needless to say the oil company is Sohio, and while our part in the complex is a relatively small one, the impact of the development on Sohio's business will be significant.

DEMAND FOR PETROLEUM PRODUCTS

The concentration of demand for petroleum products which exists in Ohio provides efficient marketers with opportunities for real marketing profits. Sohio's leadership in this attractive market is well known. Our position is constantly being challenged by the major companies in the industry but we have successfully held and improved our position despite the competitive challenges of the market place. Typical of Sohio's leadership was the introduction in 1954 of Boron Gasoline, the first Boron gasoline available anywhere. This was followed in 1956 by the introduction of Boron Super Premium Gasoline, a considerably improved premium grade gasoline for the newer high compression cars. Our company did not introduce Boron gasoline until it had undergone substantial tests which justified all of the claims we made for it. Our confidence in its importance as a motor fuel has recently been confirmed by two major oil companies who market in 23 states to the west of Ohio, and who have now introduced Boron gasoline under license from our company. They did not choose to add this product to their product line without first making exhaustive tests of their own and examination of the value of the product for their customers.

The competition for position in our market takes the form of quality, price, services and facilities. We are alert to all of the new developments in these areas. Many of them are not new to us. The current expansion in marketing facilities by most major marketers is of particular importance. In a period such as the present when highway programs are changing rapidly and new programs are being developed, the location of marketing facilities is particularly important. Uneconomic investments are easier to make under such conditions despite preliminary study and examination. Our years of experience are a valuable asset to us at this time. Our construction program for this year will be based on continuous studies of the market which extend over many years. In addition, the plans include innovations in service station facilities which may result in some new ideas as to design and construction. Both of these are important in considering current construction costs.

Our planned capital expenditures this year in production operations will approximate \$19 million, which is about the same as the average annual expenditure during the past five years, exclusive of the \$9 million spent for our share of Venezuelan concessions in 1956. Since Mr. French will discuss production with you, I will not cover this part of our activities in my comments except to point out that in our production activities we have placed greatest emphasis on the long range objectives rather than the short range results. Many of our recent investments in the field of production will not show in the income statement for several years ahead. However, these investments have important significance for our future growth and profitability.

CAPITAL EXPENDITURES

The figures I have given you add up to our approximate capital expenditures for the current year with the exception of smaller amounts to be spent in our petrochemical and transportation operations. In neither of these branches of

the business do we have any major projects underway in the current year but in both of them we are studying potential developments for years ahead.

In 1956 we started operation of our new petrochemical plant located at Lima, manufacturing ammonia and ammonia products. We anticipated problems in our first year of operation but did not expect the combination of poor weather and agricultural price weakness which existed. Both of these, together with the usual start-up problems gave us results from this operation last year which fell considerably short of our expectations. In 1957, thus far, our results have been substantially better. We have had the advantages of a better market demand for our ammonia products and have also had the production from our urea unit which was not completed until well into the second quarter of last year. Demand for urea considerably exceeds supply. We have had no difficulty in selling every bag which we can turn out. While ammonia prices are somewhat below last year's level and therefore profitability is less than earlier forecasts, we have not lost confidence that this operation will be a valuable addition to Sohio's earning power in the years ahead.

To complete my review, I am sure you will be interested in the impact of this program on our financial position. As you know, we issued and sold publicly \$25 million of 4 1/4% debentures in January of this year. These are straight 25 year debentures with a sinking fund starting in 1963. This was a step in our financial plan which we generally project for several years ahead.

Requirements for long term funds is divided between capital expenditures on plants and facilities, investments and sinking funds, and working capital. In this period our expenditures on plants and facilities have been in a steady upward trend as our business has grown and we have added new areas of activity. For example, in 1955, the \$47½ million capital expenditures included most of the cost of our new petrochemical plant at Lima. The 1956 capital expenditures of \$50 million included the amount paid for our interest in a substantial concession in Lake Maracaibo, Venezuela. In two years, 1952 and 1955, working capital represented a source of cash rather than a requirement for cash. This was due to an unusual build-up in payables in each of those years which was liquidated in the following year.

Cash sources during this period consist of retained income after dividends, non-cash charges against income, including depreciation, depletion, amortization and similar items, and sales of assets. Despite the fact that our earnings have varied during this five-year period, the total amount of long-term cash available each year from internal sources has increased. This growth has resulted principally from the increase in non-cash charges against income since our constantly growing plant investments and growing sales volume give us a steady increase in the recovery of previously invested cash out of the proceeds of current sales.

We had an excess of sources over requirements in only

two of the five years. In the other three our requirements exceeded sources and in 1956 the excess was about \$24 million. This was anticipated in our planning. However, the cumulative result had its effect on our cash balance.

By the end of 1956 our cash balance had fallen below \$20 million, indicating that new financing would be required if the expansion program was to continue.

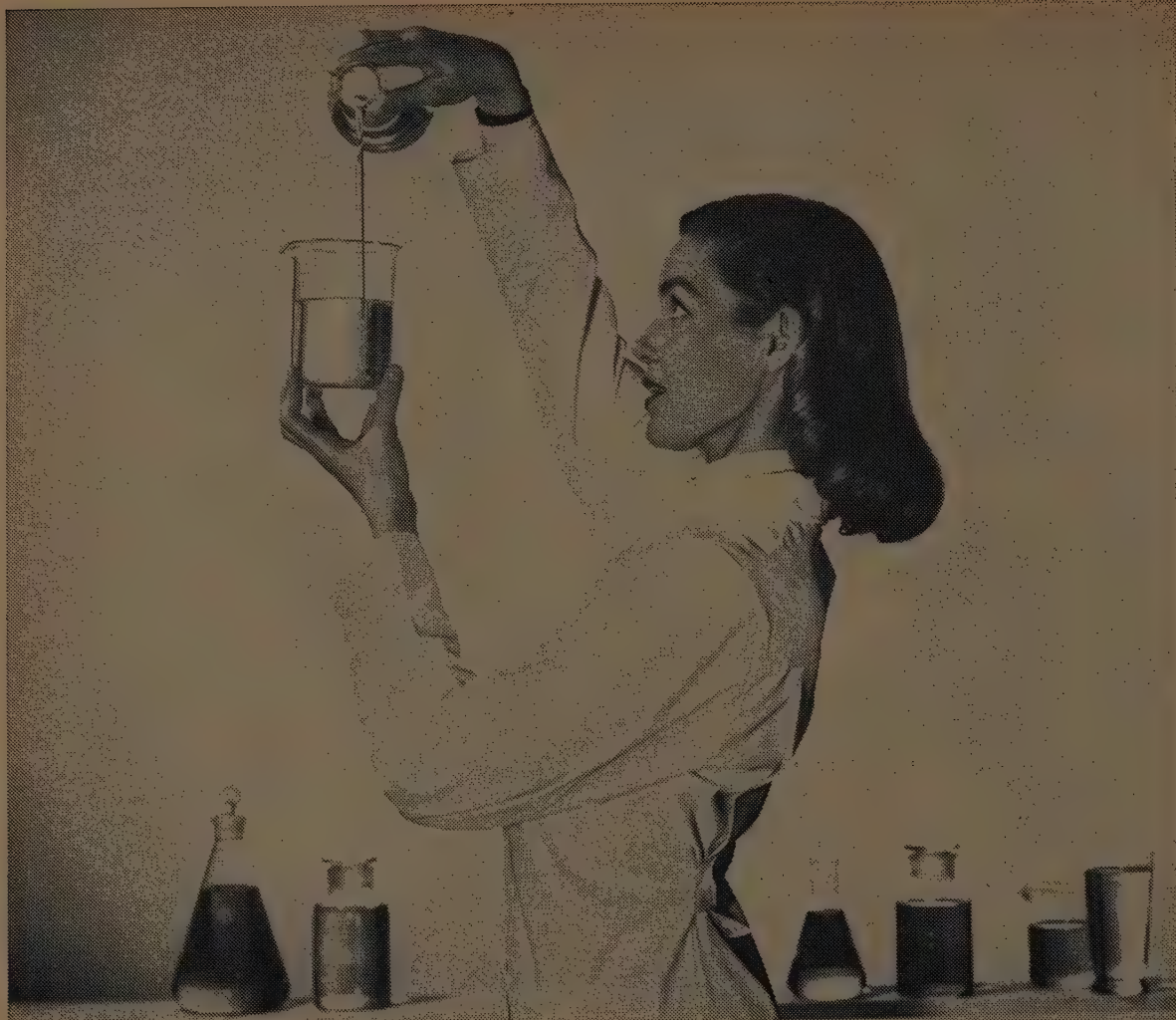
During this time our internal cash sources added up to about \$201 million. Cash requirements added up to \$223 million. Capital expenditures alone were about equivalent to all of the internally generated long term cash. We needed almost \$25 million of additional funds to carry our larger working capital position and take care of sinking funds on senior securities and investments in affiliated companies.

We cannot define at this time our total cash sources for 1957 since it is too early to determine our probable income level. However, cash sources should be equal to or somewhat greater than the total for 1956. This is because of the continued increase in the amount represented by non-cash charges against income. On the requirements side the figure has not been pinned down exactly but it appears that our total requirements will be almost as great or perhaps somewhat greater this year than they were last year. The five-year results plus the projection for the current year indicated an immediate need for about \$25 million of additional funds.

Total sales and operating revenue in each year has been substantially above the total amount of borrowed and invested capital employed. These funds employed are also divided into the common stockholders equity, the preferred stockholders investment, and the amount borrowed from lending institutions in the form of long-term debt. Our common stockholders equity position at the end of 1956 was the strongest our company has ever held. Our well balanced capital structure gives us assurance of continued ability to grow in the future, not only through internally generated funds but also from time to time through the addition of more long-term cash from the sale of additional securities.

FINANCING

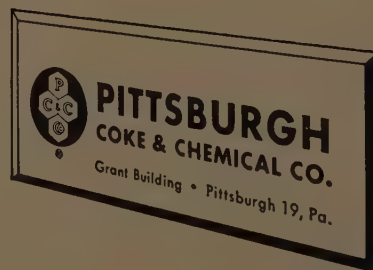
The financing provided by our \$25 million debenture issue takes care of our indicated requirements for all projects currently contemplated and approved. We hope and expect that more opportunities will arise in the years ahead which will justify the addition of more funds from outside sources. We are in an excellent position to raise additional funds on an attractive basis whenever the need for such funds is clearly defined. However, the decision as to what form any new financing may take, and when such new financing may become necessary, will only be determinable as new plans and programs are developed to the point where economic justification indicates their desirability. Our record of financing in the past is indicative of the type of planning we do for major financing steps.



Pretty colors not welcome!

INDUSTRY makes many products that must be crystal-clear—without a trace of color or contaminants. A good example is the liquid sugar being poured above. Processors have found that the most efficient and economical way to remove unwanted color from most liquids is to circulate them through a bed of Pittsburgh granular activated carbon—small coal-derived particles that look like tiny, hard black sponges. They're so porous that a single pound contains *125 acres* of adsorbent surface!

These amazing granules were developed by Pittsburgh Coke & Chemical. In addition to color removal, they're widely used today for pharmaceutical purification, solvent recovery, air and water purification and dozens of other vital adsorption processes. They're another outstanding example of Pittsburgh Coke's unique ability to create better, more useful products from coal . . . and to guard their quality and purity through every step of production, from coal to finished product.



COAL FORUM

The Challenge to Research and Development in the Coal Industry

DR. ROBERT L. SAVAGE

Vice President, Research and Development, The North American Coal Corporation

WHEN WE TALK ABOUT research and development in the coal industry we usually think of coal chemicals, chemicals from coal and liquid fuels from coal. Perhaps this is unfortunate because the present benefits to the coal industry are the result of the development of such things as mechanical loaders, continuous miners, extensible belts, roof bolts and other mechanical improvements. Without the mechanization of the mines it would have been impossible to offset the much publicized increase in labor costs. The coal industry has stabilized its production costs at a time when other fuel costs are increasing and there are good prospects for increasing the margin in favor of coal. However, in the long range picture the possibility of chemicals or liquid fuels from coal has always been cited as a potential boon to the industry. This is because almost any organic chemical can be produced from the products of coal carbonization or by various synthetic processes based on gases produced from coal. The purpose of my talk today is to help you fit this attractive but elusive possibility of profits from coal chemicals into the whole picture of the industry. The technology and know-how are pretty well advanced; the economics are gradually shifting in favor of coal. The challenge is—how much effect can the research efforts have on the financial growth of the industry. The questions of how much the effort will cost, and whether the effort is great enough to even hope for any significant developments also must be answered.

Looking first at the financial figures, we learn that in 1956 the coal industry and its related industries spent approximately \$17,500,000 for research and development. If all of this is compared to the gross sales volume of \$2,500,000,000 the percentage invested in research is only 0.7%.

In contrast, research expenditures for some other industries during 1953 were as follows:

		% of Net Sales
Petroleum industry	\$145,900,000	.8
Textile industry	28,000,000	.8
Rubber products	53,600,000	1.0
Chemical industry	36,100,000	3.0

LIMITED AMOUNT OF RESEARCH

These figures are not cited in defense of the limited amount of research in the coal industry, but rather to sug-

gest that the overall picture be examined before the industry is condemned. Actually, a more extensive tabulation indicates that coal is in line with the other large volume-low margin of profit industries in its research expenditures.

The alarming part of the situation is not that the amount of research on coal is so small, but that the amount of research by individual companies is such a small part of the total. Of approximately \$17,000,000 spent for research and development in 1955, 31% was from state and government funds, 18% from equipment manufacturers, 28.5% from other industrial sources and only 21% from coal producing companies. In other words, the coal producers have been relying on the research work by others and in some cases, the results are not available to the coal companies for future use. In the review of coal research in 1956 which was published by Igoo and Rose of Bituminous Coal Research, Incorporated in the February Mining Congress Journal, only three coal companies were mentioned by name as having announced research programs underway and of these, one has had its program for only one year. The question which naturally arises is why the individual coal companies are not doing more research.

BENEFITS OF RESEARCH

It should be clearly understood that the primary reason for research by industry has been and continues to be an economic one. With the coal industry characterized as being composed of a large number of small companies operating at small margins of profit, it is understandable that management in the industry has not been research minded. As the companies grow larger to finance the mechanization of their mines and as long term contracts with electric power plants become more common, the results will be more cash flow per share and research will become more common. No company, large or small, should undertake a research program unless there is a reasonable possibility of solving by the research method the problems that are posed. At the same time, the management of a company must realize that research is not a magic process which will guarantee immediate returns. Results from a research program are generally slow and costly, and the program should be considered as a continuing long term investment rather than a luxury

to be indulged in only when profits are good. However, the need for a research program must be recognized by an alert management because the real long range competition in industry is at the research level. If a company fails to conduct sufficient research, or if it errs in selecting research objectives, one of its competitors may beat it to the solution with the same product or even a better product.

A research program may also provide some intangible benefits to a company. One is industrial leadership. If the personnel of a company recognize that its management is making an effort toward industrial leadership, the basic driving force within the entire organization is generally improved. I am not suggesting that a research program is a guarantee that a company will be more successful, but, other things being equal, I do believe that a company whose management has established a research program is a better investment than one without such a program.

The lack of an effective research program, either by individual companies or by cooperative efforts in the industry has had an effect on the coal industry. Although there have been major improvements in mining techniques which are keeping the cost of coal level despite rising labor costs, there have been major losses of markets to competitive fuels—some of which are higher in cost. The effort to recapture part or all of these markets is going to be much more expensive than it would have been earlier because a major public relations job is now faced by the coal industry to convert customers of other fuels back to coal. Many in the coal industry have experienced almost a total loss of the railroad and domestic markets, but a technical breakthrough and an effective merchandizing program could well change this situation. Certainly the railroads are interested in a lower cost fuel and those railroads hauling coal as a major part of their business would prefer to use coal. The technical break-through will have to come from research. Bituminous Coal Research Incorporated, the cooperative research organization for the industry, maintains programs in these fields, but additional financial support from the coal producing companies is needed.

Let us now look at the present and current developments of research in the coal industry. In addition to development work on mining methods and coal preparation, which is being done mostly by the equipment manufacturers, research is being done in the following categories; transportation and storage, combustion, coke and coal chemicals, gasification of coal, coal hydrogenation, and physical and chemical properties of coal.

Two significant developments in transportation and storage have occurred within the past few months and both have been developed within the coal industry. The coal pipe line has been much in the news and Bituminous Coal Research has developed a free flowing bin design—an important factor in automatic handling of coal.

The Bureau of Mines Information Circular 7754 reports that despite the fact that 80 per cent of all coal mined in the United States is used as a fuel, only 6.4 per cent of the total research expenditures are being invested in projects relating to coal combustion. However, the work being done is important. Work is being continued on burning devices to handle a greater variety of coals and low-volatile chars,

automatic equipment for commercial and small industrial plants has been developed and work continues on various phases of the coal-fired gas turbine locomotive.

COST OF COAL-CHEMICAL RESEARCH

Research on coal and coke chemicals accounts for the largest expenditure. This is undoubtedly because of the potential profit to an individual company which could result from successful projects in this field. The market value of by-product chemicals or chemicals from coal is so much greater than the value of coal sold for heat that companies are naturally interested in investigating this business. Even though a very high capital investment is required to produce the chemicals, the economics look very attractive. However, the bright light of chemicals cannot be permitted to blind a company's management to the realities of the venture. Coal chemicals in this country have always been by-product chemicals because it is too costly to process coal for chemicals unless there is a market for the residual carbon. Thus, the market for coke has been responsible for the development of the chemicals from coke oven by-products. Predictions are that the market for coke will not expand very greatly in the future. But important developments now occurring in electric power generation may have an important effect on coal chemistry.

The low temperature carbonization of coal consists of heating coal to a temperature of about 900 degrees Fahrenheit in the absence of air and results in the production of very large quantities of char and tars from which a variety of chemicals can be produced. For example, a single power station burning $1\frac{1}{2}$ million tons of char per year, would account for the production of 40 to 50 million gallons of low temperature tar. Unfortunately, the composition of low temperature tars is enough different from the composition of high temperature tars that the products do not have an established market. A great deal of product and market development will be required to dispose of the tars from even a single plant. By this I mean that by-product chemicals obtained from conventional high temperature tar, such as benzene, toluene, phenol, creosote, naphthalene, etc., have established markets as raw materials for the manufacture of other chemicals and resins for the paint and plastic industries and for wood preservation. But relatively small amounts of these chemicals are found in the low temperature tars and the creosote fractions do not meet established specifications. Therefore, either new uses for the chemicals in the low temperature tars must be found or ways to process the low temperature tars to produce the conventional by-product chemicals must be developed. Probably both things must be done. Because of considerations such as these, the timing of a research program becomes very critical. If a low temperature carbonization plant were to go on stream today, there would be no market for the tar and it would have to be burned for its fuel value—not a profitable operation. As these tars are studied and new processes and uses developed, a strong market should develop and it will be important to have the material available as the market develops. Otherwise, the market will be lost to other sources.

A single plant can produce large quantities of tar, in

comparison to the production of many chemicals, but even though a strong market for the low temperature tars does develop, there still will be only a limited number of low temperature carbonization plants constructed. The combination of adequate coal reserves, a captive market for the char through an adjacent power plant, and low freight rates for the marketing of the chemicals can be met in only a few places. The Ohio Valley area, now experiencing a major industrial expansion particularly by the aluminum industry, is one area where this combination exists and the companies in this area can be expected to take advantage of their location.

The approximate economics of a low temperature carbonization plant to produce 1½ million tons of char per year are as follows:*

The estimated investment for a low temperature carbonization and tar recovery plant is \$8.5 million. Estimated annual operating costs, including depreciation and credit for the char at near the same value as the coal, may be \$5.6 million. Assuming a market exists or can be developed for the by-products at near existing prices, the estimated annual income would be \$7.7 million which would give an annual gross profit before taxes of \$2.1 million for a return on the original investment of 25 per cent and a payout time of four years.

Other possibilities for the use of coal for the production of chemicals also exist. If coal is processed for the production of chemicals by gasification or hydrogenation then it is in direct competition with gas and oil as a source of carbon and hydrogen as raw materials. In most areas gas and oil are still cheaper than coal as a source of raw materials and generally are preferred for technical reasons. In certain areas, coal is now economically competitive and the predictions are that it will become increasingly more competitive as favorable contracts for gas and oil become more difficult to get. The important thing is for the coal industry to be ready with new technical "know-how" to take advantage of the situation as it develops. Research can pave the way. Without it, the initiative and subsequent profits will go to the chemical companies.

At the present time, there is no technical approach which can be called fundamentally new. All of the processes mentioned in this discussion—low temperature carbonization, gasification, hydrogenation—have been used in Europe. If the market justifies the venture, a coal company can use any one of the processes and become a producer of chemicals or liquid fuels. Likewise, a chemical company can buy a coal mine and produce its own raw material for one of the processes. At one time, I thought that it would be easier for a chemical company to operate its own mine, but since

I have become more familiar with the complexities of coal mining I am not so sure. With adequate reserves of readily mined coal becoming less and less plentiful, it becomes more and more difficult for a chemical company to operate its own mines. Furthermore, the need to market large quantities of char would require long term contracts with large power plants which would put the chemical company into the large volume-low profit fuel business—not their normal area of operation. Similarly, for a power plant to operate its own low temperature carbonization plant to produce char for fuel would require that it go into the chemical business—not a normal field of expansion. The answer is probably a contract between a coal and chemical company to gain the know-how of both types of business and this will probably be the path of future developments. How profitable such operations will be to coal companies remains to be seen, but in the long range development certain of the more alert companies should considerably improve their profit margins. The challenge to research is to shorten the time required to make some of these potential processes into an attractive investment.

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*(Minet, Smith and Trilling "Economics of Coal Carbonization by the Low-Temperature Process." Chem. Engr. Progress 50, 342-7 (1954).)

The Future Influence of Labor, Transportation, and Finance on the Coal Industry

GEORGE E. ENOS

The Enos Coal Mining Company

I MOST CERTAINLY APPRECIATE the opportunity to talk to you about our industry and its prospects. For many years we coal men have heard about investment analysts, bankers, and investment bankers, but, to be perfectly frank, your activities seem to have been extremely remote from ours. It is most reassuring to see you actually are real and to realize you are willing to take a good look at us too.

Under these circumstances it is a temptation to paint our industry in a rosy light and at times you may think we are doing just that this afternoon. Nevertheless, I am sure you want to know about some of our problems and weak spots as well, and I will attempt to call your attention to a few of them.

LABOR IN THE COAL INDUSTRY

The first matter we might consider is the labor side of the coal industry. Any such reference immediately brings to mind a pair of bushy eyebrows. It is unfortunate many people think of the coal industry as synonymous with bad labor relations. There is probably just cause for this. Until recently we have been ridiculously ineffective in our dealings with Mr. Lewis. The reasons why now seem fairly clear.

In earlier wage negotiations our industry used to send representatives from various mining districts to the conference table to sit across from Mr. Lewis and his associates. On labor's side was a most able negotiator, well informed about conditions in our industry, and able to speak, I am quite sure, without fear of contradiction from his own team. On the other side were our representatives, experienced in the mining of coal, but not necessarily experienced in labor negotiations. They were usually supported with inadequate economic facts about the industry as a whole and often had conflicting opinion as to what should be done and what would be best for their own individual mining districts. In other words, we lacked unity of purpose and a shutdown of any duration usually brought us to our knees. If it did not, the threat of biased government intervention accomplished the same result. Had Mr. Lewis not known roughly how much the industry could stand, and when to stop, the results might have been even more disastrous. With the succession of work stoppages in the 40's and early 50's came increasing protest from our customers, a loss of substantial business to oil and gas, and amazingly poor public relations.

PROGRESS IN LABOR NEGOTIATIONS

Eventually, some people in our industry decided something had to be done and the Bituminous Coal Operators Association was founded, first headed by Harry Moses, and now by Mr. Fox. At the present time the method of arriving at a new contract has changed materially. It is more of

a man to man agreement, reached so far without publicity during the negotiation period. The operators have recognized the need for an experienced negotiator equipped with more adequate information about our industry, and for the first time he can speak without fear of contradiction from the side lines, because usually we do not even know he is negotiating. When an agreement is reached between the Bituminous Coal Operators Association and the United Mine Workers of America it is offered to the other mining districts that are not members of the Association. These districts theoretically have retained the right to make their own agreements with Mr. Lewis if they do not like the one made by Mr. Fox. In practice, when a contract is offered them, they usually protest bitterly, tear their hair, and then accept it. As a result, we have experienced no work stoppages in recent years and our public relations are definitely on the mend. Our new method may not be very democratic. At times the desires of the steel industry play too large a part in determining how our settlement is reached. Yet, the plan is working!

In spite of our past troubles with Mr. Lewis, we do have many things to be thankful for and which are encouraging for the future. Once negotiated, our contracts, with almost no exceptions, have been respected by the United Mine Workers organization. When we deal with Mr. Lewis we are dealing with a man who has knowledge of our problems. There has never been any question that management has always had the right to manage without interference from the United Mine Workers. Communism is apparently foreign to the United Mine Workers organization. Safety has been encouraged in good faith. I believe Mr. Lewis has a sincere interest in the Welfare Fund and the improved working conditions he has won for his men. Most important of all, mechanization has not only been permitted, it has fortunately been encouraged by Mr. Lewis on the theory there will be fewer miners, but those working will be better paid, and no limitation has ever been placed on machine running time. Had Mr. Lewis resisted mechanization, this country could be in the same economic state today that England now faces.

Whoever follows Mr. Lewis as head of the United Mine Workers of America will undoubtedly be hand-picked and hand-trained by John L., but, nevertheless, more and more operators are becoming genuinely interested in Mr. Lewis' health.

Please do not get the idea we are completely happy about our labor conditions and expect no misfortunes in the future. Undoubtedly we will continue to pay very high wages. We will have to provide even greater safety in the mines and improve our public relations to attract our share

of capable young men. However, we do not think the labor factor is a major problem today, nor will it be in the near future. In short, we know we will be gouged at times, but we suspect with more finesse.

TRANSPORTATION—A MAJOR PROBLEM

One of our major problems today is transportation. The cost of moving our product to market by rail is nearly as much as the cost of the coal at the mine. It is simply too much! We believe, with evidence to prove it, that excessive profit on the haulage of coal is used to offset losses on other railroad services, including passenger service. You know only too well that there seems to be unusual differences in earnings when you compare those railroads carrying coal and few passengers with those carrying no coal and many passengers.

You may wonder how high coal rates came about. Since the railroads used to be our best customers, we probably did not fight rates on coal as we should have. There seems to be little relationship, if any, between coal rates and the cost of hauling coal. For instance, if 100 cars of coal are hauled from a mine to a utility plant in a single train, with no switching involved, each ton will have the same rate as a ton hauled in a single car to the same city, but delivered to a coal yard where possibly it has to be switched as many as 15 times. Does that make sense? Moreover, we are constantly fighting poor service and a seemingly never ending shortage of coal cars. To top all this off, the railroads are constantly increasing our rates and compounding the felony. For instance, in 1946 the average rate on coal was \$2.27, as against \$3.45 in 1956. As you well know, they are asking for an additional increase. Yet the average price of coal in 1948 was \$4.99, and in 1956 was \$5.00, an increase of only one cent. We have complained bitterly about the rise in freight rates, but, I must admit, without much success. It follows, of course, that we have had to turn to more economical methods of transporting our product to the customer.

NEW TRENDS IN COAL TRANSPORTATION

Primarily, we have converted to water transportation. Approximately 100 million tons of coal a year are now being moved by barge and boat over inland waterways, a large tonnage lost forever to the railroads. This trend will continue for some time. It will probably slow up only when Congress decides the users of our inland waterways should help maintain them and places some tax on river transportation.

The development of coal pipe lines is interesting and most encouraging. Pittsburgh Consolidation should be congratulated for its efforts in this direction. Such transportation is yet to be proven, but I suspect it will be. Needless to say, it is being watched with keen interest by the electrical utilities. Unquestionably its use is limited—probably to localities where present transportation facilities do not exist or are inadequate, and where new large coal consuming units have yet to be built. But its development indicates the attitude of coal and of the electrical utility companies.

More and more coal, of course, has and will move by truck. Distance is often the limiting factor, but as newer

roads are built and faster light-weight trucks with high carrying capacity are developed, truck transportation of coal will expand. It has already taken millions of tons from the railroads, who have often considered local monopoly a justification for excessive rates.

Finally, progress is being made in the transmission of power over greater distances. Many utility systems, where possible, are expanding on the rivers where coal is abundant nearby and are transmitting the power by transmission line to their customers. There are many obstacles to this, but they are being overcome gradually.

WHEN WILL THE RAILROADS WAKE UP?

The question can be asked, "will the railroads change their policy, lower the coal rates, and meet competition?" My guess is they will, but with undue delay. Mr. Tuohy, president of the C. & O., and Mr. Perlman, president of the New York Central, seem to indicate a new trend is developing. Mr. Perlman, in a speech at Toronto last December, flatly came out and said it is time the railroads based their price structures on costs and it is time they begin to find out what these costs really are. Mr. Tuohy and the C. & O. have demonstrated how to give service to their coal shippers and their customers and seem to find these efforts are profitable. Management in the major railroads seems to be changing and could possibly improve. Eventually something is going to give. In the not too distant future trainload rates on volume movement will be common, and when they are, one of the coal industry's greatest problems will be solved.

HOW TO FINANCE COAL'S GROWTH

You will be told later this afternoon about the anticipated growth of our industry. A common estimate being presented is that 800 million to one billion tons of coal will be produced annually by 1975, as against 500 million tons last year.

Obviously, the financial problems in creating such production are tremendous. If one is to assume it takes approximately \$8.00 in capital outlay to make possible the annual production of one ton to a new mine, and this cost is constantly rising, it is apparent that one and a half to two billion dollars is needed for new production, not even counting the cost of replacing present day mines constantly being worked out. Where is this money coming from?

THE INADEQUACY OF OUR DEPRECIATION AND DEPLETION

It is obvious that our present depreciation and depletion reserves are inadequate to replace even our present plants, let alone create any new capacity. It is our hope Congress, in time, will change the tax laws to permit greater and more realistic depreciation reserves. Likewise, we feel coal's percentage depletion allowance of only 10% is low and quite unrealistic if reserves are to be found, proven, and developed to meet the production requirements of the nation over the next 20 years. A 20% allowance would seem far more reasonable, especially since our competitor, the oil industry, is receiving 27½%.

Therefore, basically, we must look to retained earnings, loans, and new equity financing if we are to build the mines

this country will need. Loans and new investment in the industry will not be forthcoming unless earnings justify them. Very simply then, our future earnings picture is the key to our financial needs.

THE EARNING RECORD OF COAL

You will be advised later today, and you are undoubtedly aware of the fact, that our earnings in recent months have shown marked improvement. The percentage of increase seems startling at first glance. Closer study will show the earnings of the industry are still rather disappointing. It might be worthwhile to examine the past earnings picture of the industry to understand our present and potential earning levels.

The coal industry has been terrifically competitive. It has been made up of thousands of companies operating thousands of mines. Whereas a large producer, operating many mines, can shut down individual units as the demand for coal lessens, a small mining company, operating a single mine, cannot shut down this mine without going out of business. Thus, a tendency, has existed for years, to attempt to maintain production at the expense of price, which has caused chronic over-production and cut-throat competition.

The picture has been further complicated by the sales and price pattern the industry has followed. Up to a short time ago, our largest customers were the railroads. Since we were also a good customer of theirs, they paid us a comparatively high price for our coal. In order to create railroad coal traffic, which determined the amount of our railroad fuel orders, we attempted to increase our commercial shipments by selling coal at cost or beneath cost to the utilities and large industrial firms. High railroad fuel prices in time encouraged the use of the diesel engine and we gradually lost our railroad fuel business. Our high priced retail business diminished because of oil and gas consumption. Only our low priced business remained. Yet we have been having a hard time convincing the utilities, our

present largest customer, that their prices must now be raised. Consequently, we are still selling our utility coal at levels which do not justify our capital investment.

THE TREND TOWARDS GROWTH

Gradually these basic weaknesses are being corrected. The cost of new mines and mechanization is driving the small operator out of business. There is an ever-growing trend in the industry toward consolidation and the formation of larger companies. We are finally becoming price conscious and stabilization of prices at higher levels is inevitable. In time, obvious economic laws will compel the utilities to pay a fair price for coal at the mine if they are to get the coal they need. They will pay us more for the coal and less for its transportation.

Thus, over the years ahead, earnings in the coal industry should improve. As we tend to ship more coal to large customers on long term contracts, and as our utility sales expand, fluctuations in earnings of both a seasonal and yearly nature should lessen. Of necessity, the earnings so stimulated will have to be, in large part, reinvested in the industry, thus making coal stocks attractive for growth and capital gains and possibly less inviting if return is desired in the form of dividends.

It would seem inevitable proper earning levels will attract both loans and new equity capital. The industry no doubt will be dominated by a relatively few well financed companies. It will be most surprising if the prospects of the industry do not attract the attention and investments of large corporations now functioning in other fields. This will be especially true as the possibilities and glamour of research in coal are more clearly understood and exploited.

To be sure, the coal industry has experienced rugged and disappointing years—yet its members are still optimistic. It is to be hoped the industry has before it a bright future, since the welfare of the country cannot afford to have it otherwise.

RADIO CORPORATION OF AMERICA



Dividend Notice

The following dividends have been declared by the Board of Directors:

First Preferred Stock

87½ cents per share on the First Preferred Stock, for the period July 1, 1957 to September 30, 1957, payable October 1, 1957, to stockholders of record at the close of business September 9, 1957.

Common Stock

A quarterly dividend of 25 cents per share on the Common Stock, payable July 29, 1957, to stockholders of record at the close of business June 21, 1957.

ERNEST E. GORIN,

Vice President and Treasurer

New York, N. Y., June 7, 1957

Pullman Incorporated

359th Dividend and 91st Consecutive Year of Quarterly Cash Dividends

A regular quarterly dividend of seventy-five cents (75¢) per share will be paid on June 14, 1957, to stockholders of record May 31, 1957.

CHAMP CARRY
President



PHARMACEUTICAL PRODUCTS FOR THE MEDICAL PROFESSION SINCE 1888



Laboratories

The Board of Directors has declared the following quarterly dividends, payable July 1, 1957, to stockholders of record June 5, 1957:

- 45 cents a share on Common Stock.
- \$1.00 a share on Preferred Stock.



CONSECUTIVE DIVIDEND

May 23, 1957 / North Chicago, Illinois

THE ANALYSTS JOURNAL

Mechanization in the Coal Industry

JOHN LAWRENCE

President, Joy Manufacturing Company

SINCE I HAVE BEEN TRAINED as an engineer, it gives me real pleasure to discuss the mechanization and mining phases of the industry. My remarks are made with the conviction that the coal industry is a growing, healthy, profitable industry, with good prospects ahead.

Productivity in the coal industry is easily measurable in terms of tons of coal produced per man, per shift worked. This figure is reliably reported on a national basis and shows a very favorable trend. These figures include all men on the payroll at a mine location, both above ground and underground.

Tons—Per Man—
Per Shift Worked
As a National Average*

Year	
1951	7.04
1952	7.47
1953	8.17
1954	9.47
1955	10.32 P
1956	10.79 P

*U. S. Bureau of Mines—underground and strip combined.
P—Preliminary.

Taking the five-year period from 1951 to 1956, we find that productivity increased 56%. Productivity in all manufacturing in the country is reported to have increased only 16 or 17%. These figures are indeed proof of the fact that both management and labor in the coal industry are sincerely dedicated to higher productivity. Because machinery has helped to realize these figures, they are at the same time proof that coal mining machinery suppliers have been energetic in meeting the requirements of the coal industry.

PRODUCTION SHOULD INCREASE

Looking ahead, I would anticipate that productivity should increase from the 10.8 tons per man, per shift worked, as a national average in 1956, to between 14 and 15 tons per man, per shift worked, in 1961. The figure of 14 to 15 tons per man by 1961 is indeed ambitious but let me give you some of the reasons for my belief that it can be attained through increased mechanization.

1. There are fewer coal operating companies today than there were only a few years ago. Bureau of Mines figures reveal a reduction in number of mines from about 8,000 in 1951 to 6,000 in 1954, a reduction of 25% in three years. The small family mine operations do not generally have the funds nor the coal reserves to warrant mechanization on a large scale to take advantage of the cost reductions this makes possible. As this trend continues, the larger companies, more and more, will be able to go into large-scale mechanization programs, and the national average of tons per man will increase.

2. As mines are mechanized the scope of operations actu-

ally shrinks. For example, using continuous miners, a 5,000-ton-a-day mine is possible with only four actual working places. This is on a multiple-shift basis. To produce the same number of tons of coal by conventional methods (that is, by using cutters, loaders, and shuttle cars) requires from 25 to 40 active working places. Under the new mining systems that are being developed, the rooms are longer and in many cases wider. This permits the use of more powerful and more productive equipment. Today's modern mining machinery provides sufficient flexibility to permit the use of the same piece of equipment for entry driving, room work, as well as for drawing the pillars. All of this increases the figure of tons per man, per working shift.

3. Reducing the number of working places and concentrating the operations, the problems of roof control, ventilation, transportation, and supervision all become less difficult. This too results in more tons per man, per working shift.

4. The four basic operations in coal mining are: (a) breaking the coal away from the face, (b) picking it up, (c) transporting it to the main haulage, and (d) holding up the roof as the coal is mined out. Today's continuous miners not only break coal away from the face, but pick it up at the same time and feed it onto some sort of transportation system. The new types of extensible belt conveyors follow the continuous miners as they make forward progress. They carry the coal in a continuous flow directly from the face to the main haulage. Roof bolting for supporting the roof is becoming more and more prevalent. With this type of room support, it is possible to bolt directly from the continuous miner itself at the same time the miner is taking coal off the face. Thus the mining operation continues without interruption while the roof is being supported. All four of the above-mentioned steps can be performed continuously and at the same time with modern continuous miners and modern transportation equipment.

Today a continuous miner with an extensible belt, together with an operator and a six-man crew, can turn out 700 tons of coal per shift. Using conventional methods, it takes 14 men to do the same job. With older hand methods it takes ten times as many men for this same production.

Belt turns have been developed for the extensible belt conveyor, now making it possible to move coal around 90-degree corners as it flows from the coal face to the main haulage. This greatly increases the flexibility of the continuous miner and permits further increases in tons per man.

5. Most of you have heard of portal-to-portal pay for miners. This principle pays miners from the time they enter the mine mouth until they return to the mine mouth at the end of the shift. Out of the 8 hours for which an

underground miner is paid, a good average of time actually work at the face is 6½ to 7 hours. Most of this lost time is spent in transport and for lunch. Steps are being taken to reduce transport time by providing additional strategically located portals and by utilizing individual fast cars for each crew to take them swiftly and safely to the working place.

6. With the higher value of each piece of equipment, and the concentration of this equipment, it becomes increasingly important for the mine operators to use every practical means to prevent expensive break-downs. More and more, the coal-producing companies are applying the techniques of scientific preventive maintenance, which are in themselves bringing increased productivity. Also helping are many parts warehouses. They provide regular truck delivery of the expendable parts, and contribute to keeping "down-time" to a minimum.

7. In the next two years a concentrated effort in machine design will be exerted to provide flexible and high capacity equipment for lower coal seams. This will greatly improve the tons per man from thinner seams and thereby improve the national average of "tons per man."

FURTHER REASONS FOR INCREASE

In addition to the above, there are many ideas being given consideration which will further increase the tons per man figure. For instance, pneumatic or hydraulic transportation of coal from the face to the tippie. As coal customers become less interested in large lump coal, this method becomes more practical.

Another idea is the use of closed circuit television for underground use, to give the operators better visibility without endangering life and limb. Still others include improved power distribution, more powerful underground locomotives, application of A.C. power, more slope belts, and even the possibility of Diesel-powered locomotives and shuttle cars. Although some of these ideas are more practical than others, they all add up to improving the figure of "tons per man."

The price of coal has remained relatively stable over the last eight to ten years. In 1956, the mine price averaged \$4.93 per ton, as compared to a figure of \$4.99 in 1948. If the price of coal is to continue to improve its competitive position, savings made from increases in tons per man must offset increases in wage rates, including fringes, increased depreciation charges, and increased supply costs. A rough estimate of the percentages of the principal cost items in mining coal for the years 1956 and 1980 is given herewith:

	1956		1980
Labor	50%	to	30%
Supplies	20%	"	40%
Depreciation	5%	"	10%
Other	25%	"	20%
	100%		100%

Coal industry profit margins should improve. Coal prices may rise but coal should continue to improve its competitive position over other fuels.

To accomplish this vast mechanization program will take

large sums of money. I feel confident the bankers, when they have thoroughly studied the economics of the coal industry of the future, will continue to support these programs fully. To get an idea of the magnitude of the mechanization program, consider just one machine in the program, the continuous miner. In 1956, there were 154 of these machines sold to the domestic coal industry. This is as reported by the United States Bureau of Mines. At the end of 1956 there were 536 of these machines in use in the United States. Mechanization Magazine, in their November, 1955, issue, stated that, in the opinion of coal operators interviewed then, between 2,500 and 3,000 of these continuous miners would be in use by the year 1965. This means about 200 continuous miners a year on an average will be required to meet this projected figure, as compared to the 154 sold in 1956. This same trend is generally true for other mining machines.

For a new mine just opening, the initial capital investment for plant and equipment per annual ton of coal to be produced averages about \$7 to \$8. To provide the acreage reserves and the working capital requires an additional \$2 per ton. Of the \$7 to \$8 per ton required for plant and equipment, underground machinery costs about \$5 per annual ton of coal to be produced. The above figures are approximate, to be sure, and they obviously vary from mine to mine. But they help to approximate financial requirements for a new mine.

NEW CAPITAL REQUIREMENTS

If we use a figure of 800 to 900 million tons of coal production in 1975 and relate this to requirements for new mines and machinery to accomplish an energetic mechanization program as well as to meet requirements for replacing obsolete equipment, we come up with the following figures in the way of new capital requirements for the coal industry:

Year	Estimated New Capital Requirements in Millions of Dollars For Plant and Equipment
1954	184
1955	147
1956	257
1957	226
1960	280
1965	370
1970	510

Over the next ten years the above figures indicate new capital requirements of 2½ billion dollars for plant and equipment. There is considerable controversy about these estimated figures, but the above appear to be reasonable.

These figures are staggering, but I believe they are a reasonable appraisal of the money requirements for the energetic and growing coal industry. With the prospect of increasing markets, increasing profits, and increasing margins, I believe the financial community will provide the funds necessary to implement the various all-important mechanization programs which the coal industry is planning.

The Future Outlook for Coal

HENRI PELL JUNOD

Pickands Mather & Co.

IN ORDER TO TALK about the outlook for coal in the future, it is necessary to turn back the clock and see what happened in the past.

In 1954 the coal industry was at what I believe to be its lowest ebb. The production had fallen to 392 million tons. The coal industry was referred to as a dying giant and a sick industry. It is very gratifying to see the trend go in the other direction and to hear investment specialists like you refer to the coal industry as a "Growth Industry."

During the past ten years the railroad consumption of coal has shrunk nearly 100 million tons, from 109 to 12 million tons. This has been due to the dieselization of the railroads. The retail business, in the same period, has dropped from 99 million to 49 million, or a 50 million ton loss.

Despite this, the industry has been able to assimilate these losses and make gains in three divisions, which I will take up in more detail later:

1. Electric Utilities; 2. Steel and Coke; 3. Export.

The comparative consumption in 1954, our low point of recent years, with 1956 is as follows:*

The experts and long range forecasters say we will see a coal consumption in 1975 of 850 million to one billion tons, and, frankly, I hope they are right. However, I think most of us here are more vitally interested in which direction the coal industry is going in the next five to ten years and to what extent.

Let us look at the three growth consumers of the coal industry and see what the prospects look like.

From 1954 to 1956 the increase in coal consumption by the electric utilities was 40 million tons. The utility industry generally figures that electrical energy consumption doubles in ten years. This is at a rate of approximately 7% annually compounded. In 1956, 601 billion kwh were generated and of this 475 billion or 79% was generated by steam. 70% was coal or 155 million tons.

If this relation continues, in 1963, and I take this year at random as a midway point between the five and ten year period we are discussing, there should be 760 million kwh generated by steam, of which 530 billion kwh is generated by coal or a coal consumption of 225 million tons. This is

based on 85 hundredths of a pound of coal per kwh. This would be a gain of 70 million tons over 1956. Now what about competitive fuels?

Residual oil and gas are continuing to be less available and are generally higher priced as boiler fuel for utilities in most locations.

What effect will atomic energy have on coal? Philip Sporn, president of the American Gas and Light Co. and one of the best informed men in the electric utility industry on atomic energy, predicts that by 1975 coal will supply 65% of electrical power needs, natural gas 10%, hydro-electric 12½%, oil 5% and nuclear energy only a little over 7%. He likewise predicts that coal consumption for the electric utilities in 1975 will amount to 488 million tons, slightly less than the country's entire 1956 production, and he predicts that at that time nuclear energy will supply the coal equivalent of only 52 million tons, and that by 1963 nuclear energy will supply not more than the equivalent of 15 million tons of coal.

Kenneth Davis, director of reactor development of the United States Atomic Energy Commission, stated as follows: "Having reviewed the various factors, it seems that the demand for coal will run ahead of the demand for other fuels during the next 15 to 20 years *despite* the advent of nuclear power. In fact, it does not seem unlikely that by 1970 to 1975 the rate of bituminous mining will double the present rate."

In addition, utility plants burning coal are becoming more and more efficient. In 1925 it took an average of two pounds of coal to produce a kilowatt hour. In 1956 this had been reduced to 94 hundredths of a pound, and by 1963 it will probably drop to around 85 hundredths of a pound of coal per kwh. New plants are being built today that will produce a kilowatt hour with only 7 tenths of a pound of coal.

It is only fair, however, to point out that the margin of profit on utility coal is less than that previously enjoyed on railroad fuel and on retail fuel which it is replacing in the industry. Thus the realization must be offset by increased volume and more efficient mining.

	1954	1956
* ELECTRIC UTILITIES	115 million tons	155 million tons
STEEL AND COKE	90 million tons	111 million tons
RAILROAD	17 million tons	12 million tons
OTHER INDUSTRY	88 million tons	106 million tons
RETAIL	53 million tons	49 million tons
U.S. CONSUMPTION	363 million tons	433 million tons
EXPORTS	31 million tons	68 million tons
TOTAL	394 million tons	501 million tons

The steel industry in 1956 produced 115 million tons of ingots, and the growth prediction in the next seven years is estimated by many steel people at approximately 25 to 30 million tons. At the present time nearly one ton of coal converted into coke is used to produce a ton of steel.

With the use of better grade foreign ores, taconite pellets, lower ash coals and better operation of coke ovens and blast furnaces, it is conceivable that this consumption of coal per ton of steel might be reduced from one ton to between eight-tenths and nine-tenths of a ton. On this basis, the coal requirements of the industry should be around 125 million tons in 1963, or a gain of 15 million tons.

Normally Canada takes approximately 20 million tons annually, which was the 1956 figure. Overseas shipments to Europe were about 42 million tons last year and various other countries, principally Japan, Brazil and Argentina, took 6 million tons. Therefore, the entire export tonnage amounted to 68 million tons.

The high boat rates have somewhat impeded the export business and have caused wide fluctuations in the tonnage from year to year. However, in 1956 the United Mine Workers, the Pocahontas railroads and some of the mine operators, organized the American Coal Shippers, Inc., who purchased some boats and are organized to assist in the exportation of coal. I think this will have a favorable influence on the stabilization of ocean rates which is of paramount importance to a stable export market. Such experts as R. L. Bowditch, chairman of American Coal Shippers, tells me he feels an overseas export tonnage to Europe alone of 70 million tons by 1963 is a possibility. This may be optimistic. However, I feel that the export business should at least remain in the neighborhood of 65 million tons, including Canada, and be on a more permanent regular basis than it has been in the past.

Coal will benefit as new uses are developed. The "Taconites" will use coal in their power requirements. The manufacturers of aluminum are more and more tending towards locating plants near a coal reserve rather than in far off places where hydro-electric power is available. The chemical industry is beginning to use more and more coal.

Lastly, there has been in the past few years, a steady trend in the replacement of oil and gas in schools, hospitals, public buildings and commercial installations. For example, in Cleveland out of 154 schools, 82% are burning coal. A report by H. B. Lammers when he was chairman of the Coal Producers Committee for Smoke Abatement, indicated that if the Cleveland schools had used oil instead of coal the annual increase in fuel cost would have been \$180,000.

There has been a trend toward oil burners in Great Lakes freighters in recent years. A company we operate and which has the second largest fleet of boats on the Great Lakes, has

a new 700 footer being built which will burn coal. The economies thoroughly justify this decision.

The coal industry incidentally through the efforts of their associations, National Coal Association and American Coal Sales Association, have recently organized the Bituminous Coal Institute which was created for the purpose of better coal promotion and to more thoroughly educate architects, engineers and builders on the true economies of coal versus competitive fuels.

We feel that in 1963 the industrial market, including railroads and retail coal, should be around 165 million tons.

It is becoming more and more apparent that with the expansion of the steel and utility industries, coal in the ground is becoming a valuable asset to companies as well as the nation. The leading coal companies in most cases are adequately protected in this direction, and consumers with vision and foresight are looking more and more to coal as a source of their energy requirements.

Now to summarize which way the coal industry is going and to what extent.

We must assume that with the growth of population and increased living standards that our general economy will move forward. Thus I see no other way than a forward move for the coal industry. This, I feel, will be the case for the following reasons, many of which have been covered by the previous speakers:

1. Research with new use and new users of coal.
2. The expansion of coal's major markets as indicated above.
3. Continued mechanization, which Mr. Lawrence covered so ably in a previous talk.
4. More favorable price climate as regards competitive fuels.
5. Better labor relations and fewer costly and ruinous strikes.
6. Coal reserves are more adequate than those of oil and gas.
7. More mergers and consolidations, which will effect economies and put the merged companies in better shape to expand their facilities and be in better position to secure financing for these expansions.

It costs from \$8.00 to \$10.00 per annual ton to put into operation a modern coal mine and preparation plant. Thus to meet the needs of the utility industry alone, by 1963 it would take approximately 700 million dollars. By 1975 if the growth figures are correct, an expenditure of in the neighborhood of three and one-half billion dollars could be necessary. To sum up the consumption, in 1963 as previously discussed, the main divisions of the coal industry I believe will consume as follows:

ELECTRIC UTILITIES	225 million tons
STEEL AND COKE	125 million tons
EXPORT	65 million tons
RAILROADS, RETAIL AND OTHER INDUSTRY	165 million tons
TOTAL	580 million tons

	1954 Earnings Per Share	1955 Earnings Per Share	1956 Earnings Per Share	% Increase 1955 Over 1954	% Increase 1956 Over 1955	% Increase 1956 Over 1954
(1) Ayrshire Collieries	\$2.26	\$2.77	\$3.94	22.6	42.2	74.3
EASTERN GAS & FUEL ASSOCIATES	.67	1.56	3.65	132.8	134.0	444.8
ISLAND CREEK COAL CO.	1.43	3.17	4.03	121.7	27.1	181.8
(2) NORTH AMERICAN COAL CORP.	.43	1.33	1.51(est)	209.3	13.5	251.2
OLD BEN COAL CO.	.61	1.41	1.68	131.1	19.1	175.4
PEABODY COAL CO.	.53	.81	1.01	49.1	27.8	90.6
(3) PITTSBURGH CONSOLIDATION COAL CO.	1.83	2.15	2.39	17.5	11.2	30.6
(4) PITTSTON CO.	1.36	3.06	6.30	125.0	105.9	363.2
(5) TRUAX-TRAER COAL CO.	1.95	2.02	2.40	3.6	18.8	23.1
UNITED ELECTRIC COAL CO.	1.04	1.01	2.45	- 2.9	142.6	135.6
WEST KENTUCKY COAL CO.	1.04	1.05	1.89	1.0	80.0	81.7
				73.7	56.6	168.4

(1) Year ending June 30, 1954, 1955, and 1956

(2) Fiscal year to following April 30th

(3) Net Income before special credits

(4) Adjusted to include Clinchfield Coal Corporation

(5) Fiscal year to following April 30th. 1956 twelve months ending January 31, 1957

Now what does all this mean as relates to profits and dividends? A comparison of the per share earnings of 11 companies listed on the New York Stock Exchange, the American Stock Exchange and some over the counter, and who represent approximately one-third of the commercial tonnage in the country, is interesting.

These companies show an average percentage increase of per share earnings from 1954 to 1955 of 73.7% and from 1955 to 1956 of 56.6%, or a total average gain from 1954 to 1956 of 168.4%. From these figures you can see that there has been a rather fantastic increase in per share earnings in the coal industry from 1954 to 1956. From here on, we think the growth in tonnage and in per share earnings will be on a more steady, even curve, rather than the boom

curve of the past two years. We feel that most of the major companies included in the list, in 1957 and 1958 should show reasonable and moderate increases in their earnings.

Any prognostications of this kind have to be tied to the general economy because obviously if business falls off generally, coal—which is so vitally tied in to steel and utilities as well as other types of industry—is affected immediately.

We have every confidence in the coal industry's future growth, and we feel that leadership companies with progressive, forward-looking management, will continue to expand and take a larger percentage of the increased business, and will continue to make progress in the future.



INTERNATIONAL HARVESTER COMPANY

The Directors of International Harvester Company have declared quarterly dividend No. 169 of fifty cents (50¢) per share on the common stock payable July 15, 1957, to stockholders of record at the close of business on June 14, 1957.

GERARD J. EGER, Secretary

DREWRY'S

A quarterly dividend of forty (40) cents per share for the second quarter of 1957 has been declared on the common stock, payable June 10, 1957 to stockholders of record at the close of business on May 24, 1957.

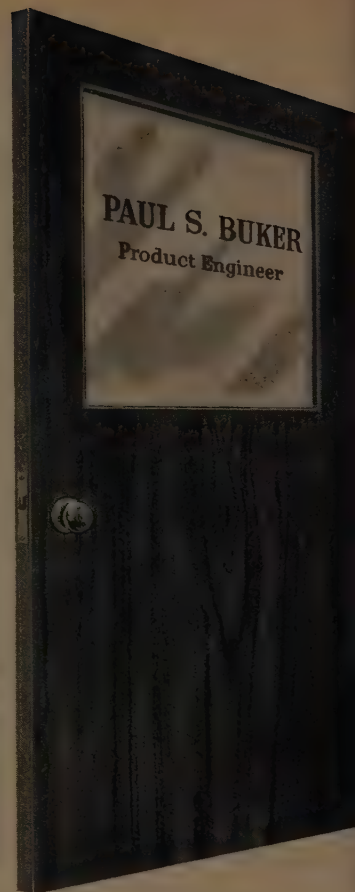
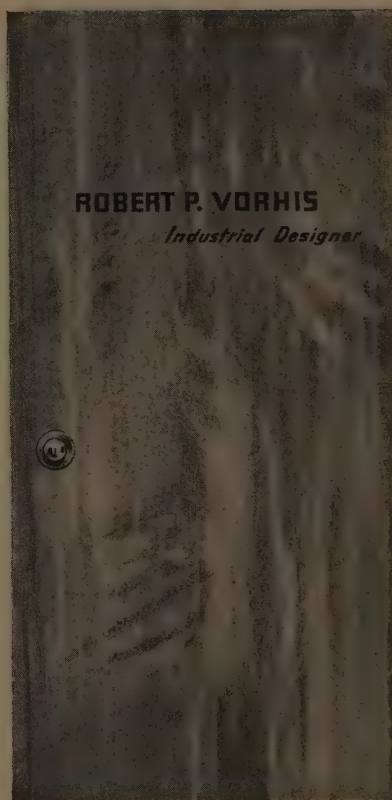
Drewrys Limited U. S. A., Inc.
South Bend, Indiana
T. E. JEANNERET,
Secretary and Treasurer

The UNITED Corporation

The Board of Directors has declared a semi-annual dividend of 10 cents per share on the COMMON STOCK, payable June 14, 1957 to stockholders of record at the close of business May 29, 1957.

WM. M. HICKEY,
President

May 9, 1957



They're designing new markets for special steels

The men behind these doors are designing exciting new products for the second half of the 20th century. Many of these products call for steels with very special properties. That's why the demand for *special* steels is setting the industry pace. While steel tonnage shipped annually since 1946 jumped 74%, shipments of specialty steel grades have more than doubled.

Armco, a leading producer of "tailor-made" steels, is winning a big share of this vast new market. Armco

ALUMINIZED STEEL®, for example, combines the strength of steel with the surface properties of aluminum. Special Armco Electrical Steels improve the efficiency of electronic equipment of all kinds. And special grades of Armco Stainless Steels are in urgent demand for supersonic aircraft.

These and many other extra-quality steels have sprung from Armco Research. This constant research has been a major factor in Armco's steady growth.

ARMCO STEEL CORPORATION

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SHEFFIELD STEEL DIVISION • ARMCO DRAINAGE & METAL PRODUCTS, INC. • THE ARMCO INTERNATIONAL CORPORATION

Iron Ore—The Big Change

H. S. HARRISON

Vice President, Cleveland Cliffs Iron Co.

SEVERAL WEEKS AGO our company had a farewell luncheon for Henry Raymond, who was retiring after fifty-one years in the iron ore business. He had started in 1906 as an iron ore salesman and he recounted to us many of his early experiences.

In the early days the great majority of his customers were small blast furnace companies and he had to travel to sixty-one different headquarters towns and cities to see them all as compared with about fifteen we call on today. This traveling, incidentally, was all done by train as automobile travel was just beginning and interconnecting roads had not even been constructed.

There was a lot of iron ore around in those days and the big problem was in short-term and long-term credit of the consuming companies. We had not only to grant extended credit terms but also it was often necessary in order to insure a market to invest in these blast furnace companies. As a matter of fact, it was in this manner that Cleveland Cliffs obtained substantial amounts of the investments in the steel industry which it holds today. For example, we owned about 60% of the Cleveland Furnace Company, which later consolidated with the rolling mills of Otis Steel Company, which in turn was later merged into Jones & Laughlin.

IMPORTANT CHANGES

I want to review with you today some of the important changes in the iron ore industry in the past fifty years. The first is the change in the consumer. Gone are the small, non-integrated furnaces with shaky credit and in their place are the large, well-integrated, financially strong steel companies.

The second major change in the iron ore industry is improved technology. Open-pits used to be mined entirely by rail haulage, whereas now of course trucks and conveyor belts are standard equipment in mining this ore and in the past twenty years trucks have gone from 15-ton to as high as 50-ton capacity. The small, railroad-mounted steam shovel has been replaced by the large, full-revolving electric shovel which can load three times as much material, and beneficiating plants such as washing, spirals, cyclone, and heavy media, have increased the ore supply tremendously. In the underground mines, block caving has supplanted top slicing in the last ten or fifteen years and productivity in

our underground mines has increased considerably. Here again belt conveyors are replacing motor tramping in many operations.

The third major change in the iron ore industry has been in the development of foreign ore reserves. With the exception of Bethlehem Steel's foreign properties (largely in South America) for its Sparrows Point plant, the United States was self-sufficient for iron ore until after World War II. There was little thought given to going outside the country. In the '30's it was generally believed that we were in a mature economy and there was so much ore around within the country and consumption relatively so small that it would last indefinitely. The war and the belief in a dynamic economy changed all this. Steep Rock was the pioneering project in Canada in the early '40's and this was rapidly followed after the war by Iron Ore Company of Canada and a whole host of iron ore discoveries such as Wabush, Ungava, Fenimore Mines, and others. Today Canada is probably the hottest thing in the iron ore development picture.

This foreign development, however, was not limited to Canada. U. S. Steel went into Venezuela after the war, Republic into Liberia, and Utah Construction into Peru. Now iron ore mining is spreading out in all directions—even to Alaska and the Sahara Desert. No longer is iron ore a domestic product—it is world-wide.

The fourth major change in the iron ore industry has been the increased capital expenditure requirements. Back in Henry Raymond's time an open-pit mine of 1,000,000-ton annual capacity could be opened for a few hundred thousand dollars. Henry Frick, as a matter of fact, bought one-half the stock of the Oliver Iron Mining Company for \$500,000 and in addition got a mortgage on the mines. Today, depending on how extensive a beneficiating plant is needed, an open-pit mine of 1,000,000-ton annual capacity would cost between \$4,000,000 and \$5,000,000. Just before Henry Raymond came with the company in 1906, we opened an underground mine of 1,000,000-ton capacity for less than \$1,000,000. Today that same mine would cost around \$15,000,000.

Development of foreign properties, with railroads, power plants, townsites, and docks, requires substantial sums of money. Iron Ore Company of Canada, for example, is spending around \$260,000,000.

But the biggest outlay of all is required for low-grade properties. When the Erie Mining Company reaches 10,000,000-ton annual capacity it will cost nearly \$350,000,000, or about \$35 per annual ton of capacity, including railroad, power plant, townsite, and dock. Reserve Mining will probably not be able to do it for much less when similar capacity is attained.

The fifth major change is caused by the change in the consumer and the tremendous sums needed for capital expenditures. This is not exactly a change but a further trend to more partnerships. For example, in 1904 the Negaunee Mine Company was formed by the Lackawanna Steel Company and Cleveland-Cliffs, Lackawanna later becoming part of Bethlehem Steel. However, this trend has been accelerated since the war by the desire of the steel companies to be more fully integrated and the necessity of large combines of capital in order to finance these developments. This is shown by such partnerships as Iron Ore Company of Canada, Reserve Mining Company, Erie Mining Company, Marquette Iron Mining Company, etc. Of course the steel companies still believe that added flexibility is secured by purchasing a part of their ore requirements and will doubtless continue to depend on merchant ore producers for a substantial portion of their long-range ore requirements.

These are five of the principal changes that have occurred in the iron ore industry in the last fifty years with most of them coming in the last twenty. There is one other change I want to talk about which has occurred in the last few years and which I have labelled, "The Big Change."

In 1951 two-thirds of the ore came from the standard ores of Minnesota, principally from the great Mesabi Range. By 1980 two-thirds of the ore would come from a combination of taconites, jaspers, and foreign ores. Today the same situation exists. The difference is that in 1953 it appeared that dependence on taconites and foreign ores was a matter of necessity because the great Mesabi Range was running out. Today it is still a matter of necessity, not solely because the Mesabi Range is running out but rather because the steel industry is discovering the value to the blast furnace of a premium grade product and is insisting on it. The steel companies are demanding premium grade ores, either high-grade foreign ores, improved direct-shipping domestic ores, or agglomerates from taconites or jaspers.

HIGH GRADE ORES AND THE STEEL INDUSTRY

The steel industry was perhaps slow to realize the advantages of these high-grade ores but once they got the point they got it well. The growth of sintering plants is a good example. In 1942, only a little more than 3,000,000 tons of iron ore were sintered; by 1955 that figure had risen to 18,000,000 tons. Another example is our new beneficiating plant which we are completing on the Marquette

Range for improvement of underground direct-shipping ores. This is the first of its kind in existence for the treatment of underground ores but it seemed clear to us that we should make more of our standard ore competitive in this premium grade market. This market is premium not only in analysis but also in structure, so we are also sizing ores on the Mesabi Range into coarse and fine so that the steel companies will have a sized product for their blast furnaces and will sinter the fines.

Why this big change? For one reason—inflation, which has raised the cost of building a blast furnace from \$7,500,000 thirty years ago to \$25,000,000 today: for another reason—increased labor costs, which have gone from less than 65c an hour then to \$2.83 per hour today, not including social security, insurance, pensions, and supplemental unemployment benefits. These two factors combine to place a tremendous premium on increased capacity from existing facilities. When you can use a premium grade ore for one-half the blast furnace burden and increase your output 20% it means that with five blast furnaces you can save yourself the additional investment in a sixth and you produce this additional tonnage with the same total operating cost.

What will this change do to the iron ore industry?

As I have tried to show, the iron ore industry in the past fifty years has been full of changes and change always brings problems and challenges. There are many hurdles to get over, both in the development of taconites and jaspers and in the development of foreign ores. In the foreign field, there are problems of transportation, labor, politics (particularly in South America), and the raising of funds.

In taconites and jaspers, we are just scratching the surface. For example, we do not yet know what will be the most suitable form for the ore—pellets, nodules, clusters, or some other form of agglomerate. We will have to spend considerable sums on research to further develop this product and at the same time to figure out a way to make a reasonable profit on it, which is even more important. Perhaps it will be in the form of direct reduction. There are about five different direct reduction processes being developed now to bypass the blast furnace entirely.

CHANGE A FACTOR IN ECONOMIC GROWTH

David McCord Wright has a very interesting article in a recent issue of *Fortune* on economic growth. He said that change is the principal factor in economic growth and adaptability is the principal factor in successful change. Willingness to take risks is another. I believe you will find in the years ahead that the iron ore industry will successfully adapt itself to new conditions and take the risks, as it has in the past. We must ready ourselves to meet not only this big change but the other big changes that are sure to come.

The Iron Ore Industry of Canada

G. W. HUMPHREY
Vice President, M. A. Hanna Co.

THE HISTORY OF CANADIAN ORE

EVERYONE WHO IS INTERESTED in the future of the American steel industry—and that really means everyone who is interested in the future of this country—should be aware of the implications of Canada's emergence as one of the world's great iron ore producers.

In 1939 there was no iron ore production in Canada proper, and had been none for 15 years. In 1956, Canada was the fourth largest ore producer in the world, and is just now beginning to hit its stride. The promise of a great Canadian iron ore industry which has been implicit for more than 60 years—ever since the classic explorations of A. P. Low, in the Labrador Trough late in the nineteenth century—is now becoming a reality.

For as far into the future as anyone can see, Canada should continue to be a major producer. But every producer needs a customer, or several customers, and Canada has one right next door in the United States as well as her own growing steel producers. Already by far the world's largest iron ore consuming nation, we will soon be the world's largest ore importer as our steel production continues to rise. It is the existence of this market—and, to an increasing degree, the needs of Western Europe's steel industry—that will allow Canada's mining industry to reach its fullest and most profitable development.

All this is really just another way of saying that Canada has an abundance of iron ore—more than it can use at home now, more than it can use at home any time in the foreseeable future, even recognizing the vigorous expansion of the Canadian steel industry which is now taking place.

Last year, Canada produced approximately 17 million long tons of ore, 12 million of it from the newly developed Quebec-Labrador Range. Approximately 90% of the total was exported, principally to the United States, but also to Western Europe and Japan.

Recently a study of probable production and consumption of iron ore around the world between now and 1980 was made. Parenthetically, let me remind you that if there is one generalization that can be made about forecasts on steel production or iron ore consumption it is this: in the last 15 years, they have universally been too low. This could well be the case with the figure I am going to quote to you now.

It is estimated that by 1960 Canada will be producing approximately 20 million long tons of iron ore a year. By 1965 this could rise to 25 million tons; by 1970 to 30 million tons; by 1975 to 45 million tons; and by 1980 to 55 million tons. Such figures are indicative of a trend as everyone must realize that historically steel expansion goes in waves.

Now, 55 million tons is a lot of iron ore. Before the war, which touched off 15 years unabated demand for steel, we considered it a lot for this country to produce. Iron ore mining, therefore, is certain to bulk very large in the over-all Canadian economy.

So much for the raw figures. I think it will be instructive now to take a moment to look at the history of the Canadian ore industry. This is not ancient history. Much of it is as current as this morning's newspaper. It just does not stand still a minute. Since it is so immediate, and so fast-moving, a quick look at the recent past will help us understand the present and make some predictions about the future.

To assist you in viewing the Canadian iron ore industry in perspective, I shall review it briefly and chronologically since its rebirth in 1939. This will also be helpful in pointing up the direction in which the industry is heading.

The modern Canadian iron ore industry had its beginnings in 1939 when Algoma Ore Properties brought its Helen Mine, in the Michipicoten area of Ontario, back into production after a closure of twenty years.

In the Steep Rock area, about 145 miles due west of Port Arthur, Ontario, an abundance of hematite float, which littered the land to the south of Steep Rock Lake, led to the discovery of deposits of direct shipping iron ore in the winter of 1937-1938.

Also in the Steep Rock Lake area, the development program of Caland Ore Company a wholly-owned subsidiary of Inland Steel Company, the seventh largest steel producer in the United States, is of major importance. This company had leased "C" orebody in Falls Bay from Steep Rock Iron Mines Limited and is now engaged in a dredging job comparable to that entailed in the construction of the Panama Canal.

In 1949, Newfoundland entered Confederation. This event brought into the Canadian production picture the Wabana Mines of Dominion Wabana Ore Limited, a wholly-owned subsidiary of Dominion Steel and Coal Corporation. The Wabana iron ore deposits lie off the northeast coast of Bell Island, under the floor of Conception Bay, on the southeast coast of Newfoundland.

In 1954, Iron Ore Company of Canada commenced the production of direct shipping iron ore from its deposits situated in the "Labrador Trough" astride the Quebec-Newfoundland inter-provincial boundary, 300 to 350 miles north of Sept Iles, Quebec, on the Gulf of St. Lawrence. This event marked the culmination of almost 18 years of continuous exploration and development. It has been a stupendous undertaking involving the construction by private enterprise of a 365-mile railway through virgin, mountainous and muskeg country and a total expenditure of about \$260 million. The company mined 8.5 million long tons and shipped 7.7 million long tons in 1955 and shipped 12 million long tons in 1956, and expects to ship about 13 million long tons this year. Although designed capacity is about 12 million long tons per year, with little additional construction the capacity could be increased to 20 million

long tons per year. On the basis of financial participation in the project a large part of the production is exported to the participating iron and steel companies in the United States. In addition, a large and growing market is being found in the United Kingdom and Western Europe. Some ore is sold domestically in response to a small but increasing demand for it.

In addition to the very large reserves of direct shipping iron ore on the Iron Ore Company of Canada's concessions in New Quebec-Labrador, there are considerable tonnages of lower grade iron ores which can be upgraded relatively simply and inexpensively.

At Marmora, Ontario, Bethlehem Steel Corporation through a wholly-owned subsidiary, brought into production in April 1955, a low-grade, open pit magnetite deposit.

In the fall of 1955, The International Nickel Company of Canada, Limited brought into production at Copper Cliff, near Sudbury, Ontario, the first of three units for the production of by-product iron ore pellets from pyrrhotite. The capacity of the first unit is 1/3 million long tons per year. When in full production the company expects to produce 1 million long tons per year.

Under development by The Steel Company of Canada Limited and Pickands Mather and Company is the Hilton Mine located at Bristol Miles, Quebec, 35 miles northwest of Ottawa. Mining by open pit methods is expected to commence in 1957. Designed capacity of the beneficiation plant is to be .6 million long tons of pelletized magnetite concentrates per year.

EASTERN CANADA

Resources of low grade iron-bearing material in the eastern part of Canada are tremendous. For instance, iron formation extends almost continuously in an arc from the most northerly tip of the west coast of Ungava Bay to the Mistassini area of Quebec. A number of companies are actively investigating various sectors of this area, with the south-west end of the "Labrador Trough" and the part lying immediately west of Ungava Bay receiving the most attention. In the south-west sector, active investigations are being conducted by United States Steel Corporation, Jones & Laughlin Steel Corporation, Pickands Mather and Company, Canadian Javelin Limited and Iron Ore Company of Canada. In the northern sector, active investigations are being conducted by the Cyrus S. Eaton interests, the Rio Tinto interests and Consolidated Fenimore Iron Mines Limited. It would seem to be only a question of time before there is a large scale production from one or more sectors of the "Labrador Trough."

In Ontario, there are also a number of areas of iron formation which are being actively investigated. In a number of instances, exploration has been encouraging. One of the most recent noteworthy commitments was the April, 1956, purchase by The Steel Company of Canada Limited in association with Interlake Iron Corporation, and in the name of Mattagami Mining Company Limited, of a low grade magnetite property 30 miles northeast of Kapuskasing. There are also substantial deposits of concentrating ore in the Red Lake area.

Another development in Ontario is the re-activation of

the old Moose Mountain operation at Sudbury. M. A. Hanna Company for National Steel Corporation expects to be producing half a million tons of high-grade concentrates there in 1959 or 1960. Moose Mountain is an historic operation in many ways, and it illustrates beautifully a point that must always be kept in mind when you are talking about the future of the iron ore industry—namely that changes in economic needs and in the state of the arts may not only make possible operations that were once impractical, it may make them actually desirable.

Before the First World War, Moose Mountain was making high-grade magnetic concentrate and agglomerating it into bricks about the size and shape of an old-fashioned paving brick. The product was excellent, but the cost of agglomeration was extremely high, and the operation failed. Even as Moose Mountain, the Babbitt plant ran into insurmountable difficulties and shut down. But from its ashes, so to speak, rose the present taconite industry, which is definitely a going and growing thing. Now Moose Mountain is coming back, and we have traveled the full circle.

There is a point to this little story, and it is in answer to the next question which always arises at this point in a discussion of the future of Canadian—or any other—iron ore mining. How much is there? What are the reserves and their economies?

One general answer has already been given. They are enormous. Any attempt at estimating them now is only an educated guess. We just do not know. It will be years before the Canadian sub-Arctic is even approximately known. But the real answer harks back to Moose Mountain and the example of the Minnesota taconites. An iron ore reserve is anything you can economically mine and process—and under that flexible definition the known ore reserves in the world are changing almost daily. Part of the reason why this is so—the easy and obvious part to explain—is that the demand for ore is very high. When a material is in short supply, the price is good. And when the price is good, you can afford greater costs of production. But to rest at this answer would be to miss the significance of a technological revolution of major importance which has been developing in the ore-and-steel business in the last two years or so, and the effects of transportation costs.

So far in this paper, we have been talking about tons of iron ore as if every ton had the same amount of iron in it as every other ton—which obviously is not so—and as if every ton had the same physical structure as every other ton—which is an equally fallacious assumption.

The study on world ore markets I referred to earlier has one very interesting table in it. This table shows not only the tonnages expected to be produced between now and 1980, but also the iron content of the ore. Averaging together all the ore expected to be consumed in the United States, be it from our own Lake Superior District, from Birmingham, from Canada, Africa, Venezuela, or where have you, we find something quite different from the old 51.50 standard. In 1960, ore consumed in American furnaces is expected to average 52.9 per cent iron; by 1965, 53.7 per cent; by 1970, 54.2 per cent; by 1975, 54.7 per cent, and by 1980, 54.8 per cent. This in the face of the fact that our great Lake Superior open pits are expected to

continue to lose quality as well as quantity until they are running only 50% iron, on an average. Many individual mines, of course, are below that now. Indeed, in one sense of the word, it is doubtful if there is any direct shipping ore left in Minnesota. The old 51.50 is no longer good enough. Steel mills are demanding higher grade in a larger proportion of their furnace burdens, and even ores of quality that we now consider merchantable without treatment may have to be up-graded soon.

Canadian iron ores reaching furnaces today run generally higher in iron content than the average produced in the United States, and because of the distances from mines to mills they had to be competitive. Naturally, furnace masters expected production from their blast furnaces to increase with higher iron content in the burden. But not only did production go up, but fuel costs went down, and over-all furnace efficiency increased. At the same time, taconite concentrates, running about 63% iron and having a very desirable structure, were beginning to reach the furnaces in appreciable tonnages. They confirmed the impression created by the more widely available Canadian ores. A little bit of extra care and expense in selection and procurement of raw materials paid big dividends in furnace operation. And since the goal of the mill is to keep the cost of iron in the ladle as low as possible—regardless of the cost of the ore that goes into it and the furnace production as high as possible in time of high steel demand—there rapidly came into being a demand for better ores.

There is another factor here as noted previously. The demand for steel is high, and the cost of new capacity is even higher. If you can add 20% to the output of an existing furnace when it is required merely by improving the quality

of the furnace feed—and this is a very constructive figure—you obviously are talking big money. You are saving money on what you do not have to build in the way of new plant.

How does this tie into Canada's future? Not only does Canada have great tonnages of what we have always considered direct shipping ore, it has immeasurable tonnages of iron formation which can be concentrated at least as easily as Minnesota taconites, because of its physical structure, and which can be made to yield a comparable product.

CANADA'S FUTURE

It is notable, I think, that most of the Canadian developments currently in the works—most of those I reported to you a few moments ago—deal with ore that must be both beneficiated and then agglomerated to improve its structure. These are costly procedures. The fact that they are being undertaken on the scale they are, and often in wilderness or semi-wilderness areas, is proof enough that this sort of improved product is what steel mills are demanding under current conditions.

The traditional advantages which Canada has possessed in respect to resource development are its geographic location, its stable political climate, its favorable and incentive legislation and tax structure, on both provincial and federal levels.

I wish to leave this thought. No matter how techniques for the utilization of iron ore may change, they all start with ore itself, and Canada has vast quantities which lie relatively close to the American mills which will continue to represent the greatest concentration of steel making capacity in the world.

POWER PACES PROGRESS IN BRITISH COLUMBIA

To meet the increased needs of fast-expanding B.C. industry — B.C. Electric in the past decade has doubled its hydro-electric generating capacity — will again double it by 1960. In addition, the Company now distributes Natural Gas.

The B.C. Electric 1956 Annual Report tells the energy development story graphically and in greater detail. For your copy, write:

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DIVIDEND

Quarterly dividend No. 145 of \$.75 per share has been declared on the Common Stock of

ALLIED CHEMICAL & DYE CORPORATION

payable June 10, 1957, to stockholders of record at the close of business May 17, 1957.

RICHARD F. HANSEN
Secretary

April 30, 1957

**Continuous Cash Dividends
Have Been Paid Since
Organization in 1920**

Iron Ores from Overseas

EDWARD F. FITZHUGH, JR.

Chief Geologist, Republic Steel Corporation

AS DOMESTIC SUPPLIES of iron ore suitable for feeding directly to furnaces dwindled, it was quite natural for U. S. makers of steel to turn to Canada for sources that could augment domestic deposits.

But our foreign explorations did not stop with Canada. We also looked farther afield and today are importing a somewhat larger volume of ores from countries overseas than from our neighbor to the north. Ten years ago these imports amounted to only 1,650,000 tons, which came primarily from Chile. Last year the United States imported approximately 17 million gross tons of iron ore, exclusive of Canadian sources. This is a ten-fold increase in a single decade. Over half of the 1956 tonnage from overseas came from Venezuela, with lesser tonnages from Peru, Chile, Brazil, Liberia, Sweden and other countries. With the exception of Sweden, the major growth in iron ore production in these foreign countries has been brought about through United States private technical aid and capital investment.

In the years ahead we can look for further increases in our volume of overseas imports. While our relative reliance on other countries will probably not increase as rapidly as our ore dependence upon Canada, American companies are continuing to explore for good, workable deposits in a number of foreign lands.

Many considerations had to be weighed when a choice presented itself between beneficiation of low grade domestic ore, or going to Canada, or moving farther afield.

Let us consider briefly the factors that normally influence a decision to undertake mining in a distant land. Being a geologist, I place the quantity and quality of ore, either proved or potential, at the top of the list. More often than not it is an undeveloped or partially developed prospect that is being weighed. Granted that the geology is favorable, risk money must be spent to determine whether the prospect can be proved up to become a mine.

But even before proving up a deposit, there are pertinent matters to be weighed. An ore body may look huge and it may be rich, but if other features stand in the way of profitable operation, there is no benefit in drilling or tunneling or sinking test shafts to establish a firm ore reserve. Transportation facilities needed to move large tonnages of the ore to our shores are of prime importance. Here at home, when a ton of Mesabi ore reaches a furnace at Youngstown, Ohio, the rail and lake movement and the handling between the mine and furnace make up 43 percent of the delivered cost. Where vastly greater distances are involved, shipping costs are an even greater part of the total. If transportation were less of a problem, we would doubtless be using far more of the high grade Brazilian ore in the United States today.

At the foreign sources developed by American steel and mining companies in recent years, there has been a great contrast in the new installations needed to get the ore

aboard ocean carriers. At the port of Monrovia, Liberia Mining Company had only to install stockpiling and loading equipment. At San Juan harbor in Peru, Marcona Mining Company found a good natural harbor and had no great difficulty constructing a dock with conveyors to load the ships.

At the other extreme, Orinoco Mining Company dredged many miles of channel in the Venezuelan River and had to install a huge floating dock to compensate for the seasonal rise and fall of more than forty feet in the river's level. One hundred and twenty miles of new rail lines span the gap between this dock and the mine at Cerro Bolivar. Marcona moves its ore from mine to port in 50-ton trailer trucks over 17 miles of asphalt-paved road. The Liberian development and Bethlehem's mine in Venezuela each called for railroads about 40 miles in length. These examples illustrate the variety of transportation problems that occur in foreign ore developments. No two are alike; and whenever an American consumer or miner looks at a foreign deposit, a sound plan for getting the ore here and corresponding cost estimates must be developed.

MINING OPERATIONS

Turning from transportation to the matter of mining operations, the work habits and potential skills of the local people must be considered. In the light of productivity, wage scales are as significant overseas as they are at home. The physical setting of the deposit and the local climate influence the ease of workability. As yet, we cannot afford to mine iron ore by underground methods in South America or Africa. Only those deposits that can be worked as open pits are competitive. There is also the obvious question of the price we must pay in one form or another to the owners of the foreign ore. All of these are rather tangible factors that usually lend themselves to estimation within reasonable limits. These factors influence both the capital investment needed to get a mine going and the direct cost of each ton of ore delivered to our shores.

Even when the expected mining and transportation costs look good, the sheer size of the capital investment can be rather staggering. For comparing the capital demands of different mining developments there is a rough common denominator that may be used. This is the number of investment dollars required for each annual ton of iron in the ore produced. For example: Where an operation yields 10,000,000 tons per year of ore containing 56 percent iron, the annual output will be 5,600,000 tons of iron. If it takes \$260,000,000 to put the enterprise into production, the investment is about \$46.50 per annual ton of iron. In contrast, where \$15,000,000 will set up an annual production of 1,500,000 tons of 67 percent iron ore, the investment is only fifteen dollars per annual ton of iron.

These figures for two recent foreign developments sug-

gest how widely capital requirements may range as we contemplate mining in varied geographical settings. For the more costly installations, there is a cheerful note. The originally planned output can usually be doubled later for substantially less than twice the original outlay. This, of course, reduces the ultimate investment 'per annual ton of iron.

Incidentally, when we apply this yardstick of dollars invested per annual ton of iron to the taconite developments in the Lake Superior region, the investments exceed \$55 per annual ton. It is clear that the industry has been willing to make heavier investments at home than abroad. These domestic developments, of course, tie into existing flow patterns and established facilities for moving ore from the iron ranges to the mills. Then, too, we are on familiar ground with respect to our own nation's economic philosophy.

OVERSEAS DEVELOPMENT

In the case of an overseas development, however, the economic climate of the nation possessing the ore is fully as important as the more tangible features of the nature, size and location of the deposit. This raises a number of questions. How favorably will they regard an operation financed by Americans? Are the laws and regulations reasonable? Is the tax pattern fair? What partners will we neither have to accept or else find it advisable to take into the enterprise? What latitude will we have in respect to the timing of production and the rate of output? Can we freely determine the destination of all the ore that will be mined, or at least of an adequate part of the annual tonnage? Can the capital investment be recaptured promptly? Are there limitations on the withdrawal of profits?

Overriding all such questions is the one of continuity. We may reasonably hope that Mr. Nasser's recent exhibition will not touch off a wave of outright expropriation. More insidious than this is the danger that new and burdensome demands will be imposed on the foreign operators after a mine has been placed in production. Where this risk seems to be significant, there is far less incentive to embark on a mining enterprise.

All of these elements boil down to the single question: Can we expect to get the tonnage and quality of ore we want as we need it and at a favorable delivered cost?

As to quality, the domestic ores for direct furnace feed moving down through the Great Lakes this year average about 50 percent iron. The ores coming to us from overseas range from 55 percent upward to 68 percent iron. The physical nature of the very high grade lump ores from Brazil and Liberia, which are fed directly to the open hearth furnaces and come out as steel after a single melting, give them a premium value.

As we have just heard from Mr. Pardee, the milling and beneficiation of low grade domestic ores is today expanding at a rapid rate. Canada is not far behind the United States in this respect.

AMERICAN FREIGHT COSTS

Partly because of higher freight costs, American operators are not yet beneficiating low grade ores at overseas mines. Some concentrates produced in Sweden are imported, and certain mines like the one in Sierra Leone that supply European furnaces are milling low grade materials. At present the Liberia Mining Company is erecting a mill to beneficiate low grade ore that has to be stripped in order to get at the richer ore that lies beneath it. Just how these concentrates will fare in competition with other ores available to the United States is not yet clear. The initial production of the Liberian plant is destined for European furnaces.

While American furnaces do not yet have to draw on distant lands for beneficiated ores and up-graded products, there are—along with the rich ores now being mined—immense reserves of low grade material in Brazil and Venezuela. The iron content of this potential mill feed is over 35 percent and it is comparable to the good beneficiating ores that Mr. Humphrey has told us about in eastern Canada.

With these widespread resources, there is no predictable prospect of the Western Hemisphere running out of iron. Indeed, the huge reserves of lower grade ores here at home, in Canada and in South America will serve as a stabilizing factor in the iron ore price structure for generations to come.

And, as is today the case, the expansion of ore mining in one area or another will be governed by the quality of furnace feed produced, its cost delivered at the consuming furnace, and assurance of continued supply.

WE GET ORES FROM OVERSEAS

While I have dwelt on a number of the problems, there is also a happy side to the foreign development picture. We are getting ore from overseas to augment our own supplies, and we will get more in the years to come. This trade enables the producing countries to buy American exports. The payrolls raise living standards in the vicinity of the mines, and where the government's take is wisely spent, the whole country benefits.

Economic ties of this sort, whether they spring from iron ore, from ores of other metals, or from a rubber plantation, tend to unite nations in a very real community of interest. Such bonds are far more realistic and should be more durable than friendships sought on the one-way road of governmental gifts.

IF YOU BUY OR RECOMMEND STEEL STOCKS

this short quiz can be profitable to you!

Here are three questions about the steel industry that are most frequently asked by the Wall Street experts. How many can you answer? Par for the course is one out of three.

Try it!

1. "Will other metals and materials, such as aluminum, seriously threaten steel's demand?"

☐ YES ☐ NO

Last year the total domestic consumption of aluminum and plastics amounted to 3% of steel production by weight, about 17% by volume. Other metals and materials compete only where they possess technical advantages. Their growth has come about in the development of new uses or at the expense of *other* metals and materials. Why? Because of steel's versatility and lower price. The mass market belongs to King Steel. No other product on the horizon can come close in price. Basic steel is approximately a sixth the cost of aluminum, a ninth the cost of copper and a fraction the cost of most plastics. Steel's greatest advantage lies in its low, low cost.

2. "Will new steel expansion—such as Republic's multi-million-dollar program—create an over-production that can eventually hurt the industry?"

☐ YES ☐ NO

The growth of the steel industry has kept pace with the growth of our ever-expanding economy, which has been increasing about 3% to 4% annually. Few people realize how fast our country is really growing: We've added 20 million people in the last seven years and we'll add another 35 million during the next ten. The industry will

have to expand present production by at least 20% just to keep up with our population growth. The added movement of people to the suburbs, coupled with the required homes, super-highways, schools and utility services, will absorb millions of tons of steel each year. New products and processes will lend their weight to the demand for steel. It is fairly evident that steel consumption will continue to grow along with our national demands.

3. "Are there really new processes being developed that will reduce the cost per ton of new steel capacity?"

☐ YES ☐ NO

Leading steel companies, such as Republic, are spending millions of dollars to scrutinize present methods of making steel to find new and less costly ways. This look at the efficiency of present-day steelmaking is one of the long-range objectives of Republic's new "Research Center" at Independence, Ohio. For one example, some 150 scientists and technicians will concern themselves here with a commercially feasible way of directly reducing iron ore to iron. This direct reduction of ore could cut the cost of steelmaking. The continuing search for new ways of making steel better and at lower cost is essential to Republic's growth.

If you've answered the first and second questions with a "No," and the third question with a "Yes," you sir, are, verily, a man of steel.

REPUBLIC STEEL General Offices: Cleveland 1, Ohio
Where diversification creates stability

REPUBLIC STEEL CONFERENCE

Men, Money and Attitudes

T. F. PATTON,

President, Republic Steel Corporation

CHARLIE WHITE AND I are going to share, this afternoon, the pleasure of discussing with you a few facts about Republic Steel. My job is to tell you something of its financial condition, its employee relations and its attitude about management.

For the last several years Republic has had a chart in its annual report entitled "Capital Structure Relationship." Every time I look at that chart it makes me feel good. And, even better, the story it tells improves with age.

For one thing, the chart shows that since 1954 Republic has had no prior preference stock to make a prior claim on its income. Then, too, I like the debt story told by the chart. In just three years—from the start of 1954 to the end of last year—Republic's long-term debt dropped from \$151 million to less than \$41 million. This, despite a recession in 1954. And despite, too, capital expenditures that soared to \$107 million in 1956 as we began to pick up steam on the big expansion program authorized in the summer of 1955.

Capital expenditures this year will climb even higher—to about \$160 million, in fact. Helping to finance this outlay will be our first use of a five-year revolving credit of \$75 million established in 1955 with several leading banks.

THE WORKING CAPITAL HAS DOUBLED

The chart also shows that common stockholder equity has grown from \$265 million in 1947 to \$657 million in 1956. Republic's working capital has doubled during the same period.

The chart makes it clear that Republic has thus far been able to finance its current large-scale expansion and replacement programs out of retained earnings and depreciation allowances. Yet, our stockholders have fared well. Reflecting a 2-for-1 stock split in 1955, common stock dividends have risen steadily from 50 cents a share in 1946 to \$2.625 in 1956. Currently, they are running at a rate of three dollars per year. Despite the financial burdens of the two huge postwar expansion programs, our directors have seen fit to channel almost half our total earnings since 1946 into shareholder dividends.

Compared to the past, our earnings over the last several years have been healthy, to say the least. In 1946, for example, Republic closed its books with earnings of \$16 million. Last year they were \$90 million. In the last six years

Republic has made more money than it earned during all its 21 previous years.

I am glad to say this favorable earnings picture is continuing. Net income of \$28 million for the first three months of 1957 represented the best first quarter earnings we have ever had. Sales of \$354 million were also a record first quarter high. These figures were reached despite a slight drop in production and shipments compared to the first quarter last year.

INCREASED SALES AND EARNINGS

Increased sales are only a part of the story behind our higher first quarter income this year. The other part reflects the increased earnings potential of newer, more efficient facilities. This is seen in the earnings of 7.9 percent on sales so far this year compared with 7.5 percent for the first quarter last year. After this year's expansion brings additional modernized equipment into being, we expect a further increase in the profit potential of our plants.

Forgive me if all this sounds like unrestrained tub thumping; but I think you will agree that Republic is currently in the strongest financial position in its history. Our borrowing potential for future programs is excellent; and investor confidence is growing, as witness the rise in the number of shareholders from 60,000 in 1951 to 90,000 in 1956. In addition, Republic's securities are now in the portfolios of 55 investment companies, which hold over a million shares of our common stock.

We would be misleading you, however—and worse yet, deluding ourselves—if we inferred that financially all is serene. Like Foster Dulles, we, too, have our agonizing reappraisal. The agony for us lies in the contemplated cost of future expansion.

When it comes to expansion, Republic thus far has been pretty fortunate. When you visit our Cleveland plant this afternoon, you will see a perfect example of how we have integrated our new ingot capacity into existing plants and tie it in with existing service and supporting facilities. Because we have been able to plan most of our current expansion in this fashion, the 19 percent increase in our capacity is being built at approximately \$85 per ton.

COST OF EXPANSION

But we are rapidly exhausting our opportunities to expand by rounding out and re-engineering existing plants.

Our operating people tell us that future large-scale expansion could cost us between \$200 and \$300 a ton. And, when we get to the point of having to build new plants and supporting facilities from the ground up, we will be talking capital expenditures of between \$300 and \$400 a ton.

When this is taken into consideration, the adequacy of our net earnings must be measured by an entirely different yardstick.

This is one of the things we try to pound home when we meet across the bargaining table with leaders of the United Steelworkers of America, who view our \$90 million net of last year—or the \$86 million of the year before—with no small degree of interest.

The heavy cost of expansion is not the only reason why Charlie White and other steel industry leaders have been calling for a more realistic price structure for steel. Steadily increasing labor costs have been another prime factor. You cannot have labor costs going up eight percent a year alongside productivity increases of only three percent without throwing pressure on the economics of the business. Something has to give; and the only release valve that has appeared thus far is the price level.

I say this regretfully because we realize that steel has a primary responsibility to the nation to resist inflationary price increases. This is another point we stress repeatedly at the bargaining table.

Fortunately, I think we are making real progress in enlarging the areas of understanding between steel management and union leadership. The three-year contract negotiated last year was, to my mind, a ten-strike for both the companies and the union. I believe it marked the beginning of a more mature, more sophisticated era in steel industry labor-management negotiations.

THE MEETING OF REPUBLIC & UNION REPRESENTATIVES

A concrete example of this new approach was a highly satisfactory meeting in Cleveland just a few weeks ago of 125 representatives of both Republic and the union. The meeting was held to review our joint relationships under the three-year contract. Both sides agreed that relationships were good. Both upheld the desirability of the three-year agreement. The union assured us of their intent and desire to comply scrupulously with the no-strike clause of the contract. We promised to work diligently to see that grievances are handled promptly and fairly, and in accordance with the agreement.

Both parties agreed that wildcat strikes and unauthorized work stoppages constitute an unwarranted hardship on both employees and employer. And both sides expressed a desire to hold similar meetings in the future.

These, I submit, are healthy signs of more statesmanship in labor-management relations.

I do not think I am being starry-eyed when I say that the increased cooperation and maturity shown at the bargaining table is matched by increased satisfaction and stability on the part of our working force itself. You see it in the plants—in the attitudes of the men and women who make up the Republic team. You see it in the length-of-service

records—in the growing proportion of our people who have worked with us for 10, 15 and 20 years or more. You see it in the willingness—indeed eagerness—of veteran employees to participate on their own time in special training programs designed to up-date their knowledge and understanding of today's complex steel industry technology.

THE URGENCY OF TRAINING

At Republic this matter of employee attitude and performance is extremely important. The constantly increasing technology of steelmaking is putting a growing premium on people with skill, technical know-how and a desire to excel. A principal solution, therefore, to increasing productivity lies in more mind-power—mind power that can comprehend, control and use expertly today's tools and equipment.

This is why Republic has become one of the "trainingest" companies I know. This training ranges from the young apprentice learning how to become a die-maker to the middle level executive given advanced university studies in corporate and business administration.

Recognizing that the foreman makes up management's first line, we have directed a good bit of our training toward operating supervision. Republic is not only training intelligent, ambitious young men, both college and non-college, to become top-notch supervisors—it is training present supervisors to become better supervisors.

It has not all been the so-called "bolts and nuts" type of training either. We have gone into refinements. For example, Republic has broadened our foremen's knowledge of basic economics. We have deepened their insight into human relations. We have familiarized them with the details of the labor contract and the application of its provisions to specific problems. All this, we believe, has made them better, more confident leaders of men.

Republic's training has not stopped with the plants. The offices and laboratories have their share. These programs have accelerated men's progress in the fields of engineering, research, accounting and sales.

And about a year ago Republic added a new element to its training repertoire. It is called O.M.I.—Order Makers Institute. Essentially, O.M.I. is a modern, highly dramatized program for increasing the sales potential of literally hundreds of distributors of Republic products from coast to coast. Motion pictures, dramatic skits, flip charts, quizzes and discussion periods are utilized to increase distributor knowledge and interest in our products. O.M.I. has been well received by our distributors and is doing an effective job of making them a harder hitting part of Republic's sales organization.

THE MANAGEMENT

In closing, I would like to say a few words about Republic's management. Republic has one of the most flexible industrial management organizations I know. There is a reason for this. It lies in our attitude toward the management function.

While we have a well-organized and closely knit management team, we have no rigid management organization chart. We have avoided stressing tight lines of authority.

We have deliberately shunned formalized descriptions of the scope, nature and requirements of managerial jobs.

We have avoided these things because we believe the focus should be on the man, not the job.

Semantics? Perhaps—but we would rather stroke our oars with men and women who feel they can bring to their jobs all the imagination, creativeness and constructive improvement they can give. We are not interested in people who can follow with perfection the stereotypes conceived by vocational engineers, management experts and the like. We fear administrative regimentation; we applaud creative management.

We believe Republic has mobilized the vital elements of

materials, machines, money and men into an effective, energetic, forward-looking steel company. We are confident that the company is poised to meet the demands and the challenges that the future will bring.

We look to that future with eagerness.

I like to think of it along the lines of the Washington cab driver who was asked the meaning of the inscription near the top of the Archives Building which read: *The Past is Prologue*. Scratching his head, he responded: "I'm not sure, but I think it's sort of a high-falluttin' way of saying 'brother, you ain't seen nothin' yet.'"

That is the way I feel about this country; and that is the way I feel about Republic.

A Time for Growth

C. M. WHITE

Chairman, Republic Steel Corporation

YOU HAVE JUST LISTENED to the splendid report that Tom Patton has made on the financial condition of our company, on our training program, and on our management structure. We are proud of Republic, and of the job it has done.

I am particularly proud, because when I was making up my mind to join the company in 1930, I was advised by countless friends against leaving an established organization like Jones & Laughlin and going to this "motley aggregation of steel and manufacturing plants known as Republic Steel."

The path from where we were then to where we are today has not been an easy one. It has not been a casual stroll through the canyons of Wall Street, or the automobile centers of Michigan, or the oil fields of the Southwest.

It has taken unremitting planning, scratching and clawing to reach the point where we could carry out our expansion program without jeopardizing the financial security of the company. But we have done it, and the very fact that it was tough going has taught us some lessons. On the one hand it taught us prudence and careful planning; on the other it taught us to take the calculated risks that are involved in so many business decisions.

I do not mean these statements boastfully. I am working up to a point which I shall make in a couple of minutes.

RISKS AND REWARDS HAVE BEEN GREAT

We started out in 1930 with a calculated risk on our electric weld line pipe and casing, and it has paid off handsomely. Our risks on pressure blowing were tremendous, but the rewards have been great.

Another example that might interest you was the risk we took when we built our big strip mill here in the Cuyahoga Valley in 1937. Times were still bad, if you remember. We had not paid a common stock dividend in seven years,

and we knew that the new mill would mean shutting down the old hand mills at Massillon, Newton Falls, Monroe and Canton. But we decided it was a good risk. We figured that we had 20,000 tons of cold rolled sheets per month to put on this mill, so we built it.

But the important thing is that we designed it for expansion. Much of the basic equipment that went into that original mill is part of the much larger mill that will have a capacity of 110,000 tons of strip when our current expansion program in Cleveland is completed in August of this year. We had to move a river twice, and put in a great deal of new equipment such as heating furnaces and coilers, but many of the basic facilities have been there since 1937.

It probably looked foolish to some people at the time, but we believed in the future then, and we believe in the future today. We are going to continue to take the kind of calculated risk—the outgrowth of careful planning and evaluation—that has been responsible for the growth not only of Republic, but of the economy as a whole.

THE FUTURE NEED FOR STEEL IS LARGE

Virtually every statistical fact that we have gathered indicates a greater and greater need for steel in the years ahead. We are playing our cards that way. We do not, however, intend to make any sensational moves that will endanger the company's financial stability. Before we jump into any project we find out exactly what it will cost, what it will contribute to the over-all strength of the company, and what the effects will be if business does not show up in the volume we expect.

I want to emphasize that point about contributing to the over-all strength of the company for two reasons. One is that we want to be a well-balanced, adaptable production machine. The other is that we can save money when we round out existing facilities with new.

This is part of our standard pattern, and every move we make to raise capacity not only improves our earnings because of the additional tonnage billed, but also because we get a cost reduction on a big chunk of tonnage which we are already producing. This has been a big factor in Republic's rise, and will continue to be a big factor in future expansion programs.

A CONTINUED GROWTH IS EVIDENT

Now here is the point I wanted to make. The time for risk taking has not passed. The time for careful, long-range planning has not passed. The time for growth has not passed. Even the most conservative projection of today's economic trends points to a continuation of the phenomenal growth that has made this past decade one of the great periods in industrial history. Look at some of the facts.

Babies are being born at the rate of over four million a year. By 1965 our population will have passed 190 million. To support this population we will need at least 76 million workers, and a gross national product of over \$560 billion.

To provide this outpouring of goods and services, annual capital outlays for plant and equipment may exceed \$50 billion. In the decade ending in 1965, capital spending in the oil industry alone is expected to exceed \$73 billion, and electric utilities are planning to spend approximately \$60 billion during this same period.

By 1965, there will be seven million more households, and probably eleven million more spending units in the \$5,000-and-above bracket. Automobile sales will be averaging at least eight million cars per year; demand for oil will have reached 12.8 million barrels per day; the use of electricity and the sale of electrical products will have doubled, and the volume of new construction of all kinds may well have passed \$65 billion per year.

And the steel industry must supply the steel to keep this tremendous economy going. We shall do the job in two ways: by building new capacity, and by getting more production out of the capacity we have.

Both are important, but I think the importance of the second is too often overlooked. In 1914, for example, 462 blast furnaces in this country had a total capacity of 49,700,000 tons of pig iron. In 1956, 261 blast furnaces had a total capacity of 85,500,000 tons of pig iron. That is progress, in anybody's language.

Those of you who make the trip to the Corrigan-McKinney steel plant today will notice four blast furnaces on your right as you drive out Independence Road. The first of those furnaces, Number 1, was built in 1907. The ore, coke and limestone were carried in two-wheeled barrows onto an open elevator which took the man and his load to the furnace top where he wheeled it over and dumped it on the large bell. When the bell was loaded it was dumped into the furnace, and I am told that the ensuing smoke and flame could be seen as far away as Lorain. This little furnace made only 400 tons per day, yet it took fourteen men per

turn to keep it loaded. The furnace you will see there today has been rebuilt and enlarged to 1325 tons capacity, but instead of fourteen men it requires only two men per turn to keep it loaded.

This is a good example of why and how we have prosperity in this country, and the world's highest standard of living.

DISCOVERIES THROUGH RESEARCH

Through research we discovered how to design bigger, more efficient, more highly mechanized furnaces. By raising capital to build a new furnace to this design, and by training men to operate it, we freed twelve men for other essential work, and more than tripled the daily output of iron. Equally important, we made each job safer, and harnessed electrical power to do the hard mechanical labor.

If you want a good example of how capital works for everybody's benefit, I do not know of a better one.

Farther out Independence Road you will see our Number 5 and Number 6 furnaces on the right, and beyond the Jones & Laughlin furnaces which adjoin our first four. Number 5 has a daily tonnage record of 2200 tons; Number 6 has a record of 2,076 tons.

Mechanization and labor saving devices have released more and more men for more productive jobs, and as production has risen the nation has prospered. With more money being invested every year in training, in research, in product development, in better processes and machines, I can see nothing but prosperity ahead both for Republic and the economy.

Republic Steel Field Trip

Trip Manager: ROBERT D. MILNE

Boyd, Watterson & Co.

Buses began loading immediately after the management conference session in the hotel. This visit presented an opportunity for an eye-witness view of the drama of steel-making, all the way from the unloading of ore boats at Cuyahoga River docks to the emergence of bright steel from the finishing mills at the 98-inch strip mill, the world's largest. The trip covered coke ovens in operation, and a 1500-ton blast furnace, in addition to the strip mill. A dramatic feature was the visit to No. 2 Open Hearth, where furnace doors were opened and a cobalt screen permitted a look inside to see steel bubbling like water at 3,000 degrees. Republic's multi-million dollar expansion was in evidence at every turn.

ANNUAL DINNER

Robert J. Wilkes: "Members of the National Federation of Financial Analysts Societies and Guests at this our Tenth Annual Convention, I am sure you all agree with my reaction to this convention — that it is indeed outstanding. We came here with complete confidence that Cleveland would do such a job. Now we know that our confidence was not misplaced. We in Boston last year felt happy over our convention, but now we must honestly admit Cleveland has reached a new high. We certainly owe the Cleveland Society many thanks for their splendid work.

You all have on your tables the names of those sitting here at the speakers' table and you know that with the exception of the officers of your Federation they are here as representatives of our 21 Member Societies. This should remind us that our National Federation is a true Federation, made up of individual societies, each vital, vigorous and autonomous, which are banded together for the mutual advantage of all. May I ask those representatives to rise as a symbol of our unity?

May I ask your national officers to rise? Gil Palmer of Cleveland is, you all know, our new president-elect. Hartley Smith of Los Angeles is our new executive vice president-elect, and George Hansen of Boston continues as our treasurer and executive secretary. We are fortunate to have these men willing to assume the day-by-day jobs involved in operating our Federation. We surely have excellent leadership for this coming year.

It is now my pleasant duty as your President during the year just ending to give you a brief resume of the Federation's activities for this past year. I feel that we have continued to make progress. Physically, we have grown this year with two Societies added during the year—Baltimore and Rochester. Since this is the first convention in which these Societies are participating as actual members, I think we should all welcome them officially. May I ask those from these two Societies to stand. Our membership now exceeds 5,500, an increase of almost 300 during the year. There are now groups organized and functioning in several communities which have expressed a desire to become affiliated with our Federation. Our Admissions Committee is working actively with these, and it seems certain that we will be still larger a year from now.

Turning from numbers to the intangibles of enthusiasm and the breadth and variety of our programs, I have been tremendously impressed during this past year when I personally visited all but two of our Societies. I wish that you could all have had this privilege. Make no mistake about it, the members of this National Federation of ours are making an important contribution to the financial life of our country and Canada. Membership standards and qualifications are being more than maintained. Those of

you who were at the directors' meeting on Sunday are well aware of the good work being done by your various committees, all of which are carrying out important activities. It is unfair to single out any of these, but I do want to call your attention to the great success of our initial analysts seminar last August and our expectation that this year's seminar will be even more outstanding; our Government Relations Committee actively cooperated with the SEC on a number of occasions; our directory is keeping pace with our growth and is filling a real need; our Analysts Journal circulation continues to grow and the quality of its articles to rise. Our Journal's success is largely due to the able and conscientious work of its managing editor, Helen Slade. This is the first convention she has been unable to attend and we miss her.

It has been a stimulating experience this past year serving as your President and it has set me to thinking a little more about just what this development of our profession of security analysis means. I think it has been truly constructive. To the extent that we analysts are successful in interpreting future trends and needs, we are helping, on the one hand, investors to secure maximum returns from their investments and, on the other hand, industries to secure capital by channeling funds into those areas where it is most needed. Finally, I believe that the entire community benefits from having prices of securities more fairly equated with each other, which is what the security analyst really seeks to accomplish. May I now introduce Gilbert Palmer, our next President."

Mr. Palmer thanked Mr. Wilkes and the members, and



ROBERT J. WILKES
*Retiring President, National Federation
of Financial Analysts Societies*

acknowledged the important contribution to the convention of Messrs. Miller and Boyer. He then asked Shelby Davis to present a plaque to Mr. Wilkes in gratitude for his great service to the Federation. Mr. Davis told of the selfless labors and valuable contributions of Robert Wilkes, to which Mr. Wilkes replied:

"Thank you, Shelby, and thank you all, members of the National Federation. This plaque will always recall pleasant memories to me and I certainly appreciate the splendid cooperation which I have had this past year." He then introduced the dinner speaker, saying:

"I would now like to introduce our speaker of the evening, Dr. Clyde Williams, who is a key executive in an organization that has participated in the technical and economic planning of industrial firms and government agencies in more than 42 countries during the past quarter century. As president of Battelle Institute, one of the world's largest independent research organizations, he is intimately acquainted with the problems and structural bases of the whole gamut of industry. He is well known

for his own technical work and the major research programs for industry and government he has directed. A businessman, as well as a research executive, he also has had diversified experience in corporate organization, direction and finance. A graduate of the University of Utah, Doctor Williams holds five honorary doctorate degrees. Immediately prior to and during World War II he was chairman of many committees that advised the United States War Production Board and other American governmental agencies on materials policies and that acted in liaison between government and industry in the establishment and execution of war-vital research. Doctor Williams has been a member of the Battelle Institute staff for 28 years, serving successively as assistant director, associate director, director and president. Two of Battelle's major accomplishments under his administration in recent years have been the establishment of laboratories at Geneva, Switzerland, and Frankfurt/Main, Germany, and the building of a new center for atomic research.

"It gives me great pleasure to present Dr. Clyde Williams."

Our Expanding Economy

DR. CLYDE WILLIAMS

President, Battelle Memorial Institute

I HOPE YOU WILL APPRECIATE the courage it takes for a person in my business to appear before a group of specialists and financial wizards such as you and attempt to talk on a subject on which you are the nation's authority—the expert's expert. But I always have believed in the desirability of the commingling of ideas from people like you, who are on the financial firing line, and people like ourselves, who are providing some of the ammunition you use.

Science and its application have had a tremendous "play" in the years in which all of us have been active. In this country especially it has left its mark on our social customs and our economy—our very lives. So, since you asked me to, I am proud to have been chosen to talk to you about this most fascinating subject. And, quite naturally, I will slant my remarks toward my own field and attempt to show you what effect technology has had and can have in the future.

I do not believe it is necessary to justify before this group the fact that we are in an expanding economy. I believe this expansion is continuing over the long pull even though it may slow down, or even stop for substantial periods of time.

GROSS NATIONAL PRODUCT

Gross national product, which has been increasing at a rate that doubles about every 18 years, is still going up but the gain is not quite so rapid. We are apparently under-

going a period of backing and filling, but this is normal in an expanding economy. Progress in any field, whether it be in business and economics or in science and research, always comes in spurts. Smooth progressions exist only in the realm of mathematics and natural law. When human beings are involved, smooth lines are only statistical averages.

An expanding economy does not mean lack of recessions in any specific activity or in business generally. Periods of backing and filling, as I believe many of you financial experts will agree, are quite salutary. What is important is that the long-range trend continues. It should continue as long as the underlying conditions responsible for our progress remain in force.

What are the underlying conditions that have made us the strongest nation in the world—industrially, financially, and militarily? They are primarily the quality of our people, the excellence of our natural resources, and our philosophy of government. All three are essential, working together for the welfare of our nation. For the long term, most important is the quality of our people, who are industrious, progressive, and competent. Next in importance is our philosophy of government which encourages enterprise, competition, independence and freedom of action. An abundance of natural resources alone does not guarantee human abundance, as we have seen time and again throughout history and can see in the examples of many nations today.

It has been of great significance in our nation's progress, however.

From these three basic assets come our other dynamic values, such as our social institutions, our corporate form of business, our industry, our financial structure, and our research and technological establishments. I will direct most of my comments toward technology and research because they represent one of the primary reasons for the current strength in our economic growth pattern and the tremendous advance and diversification of industry over the past 20 years.

RESEARCH

Scientific research before World War II did not amount to much dollar-wise in this country. In 1929, industry and Government together spent only about 160 million dollars on research; by 1940, expenditures were only about 350 million dollars. The war, however, demonstrated to both industry and Government the value of applied research. As a result, the research effort of the country grew rapidly until today the total expenditure is $5\frac{1}{2}$ billion dollars annually. This 15-fold expansion of research since 1940 and its wise application is a main reason for the many new products we have seen come into the market, for the growth of corporate plant and profits, and for the rapid increase in American standards of living—not to mention our increased military security.

Now it can be safely said that research itself is a national resource and that it is equivalent in its economic effect to a natural resource. Industry actually uses scientific research just as it uses a natural resource. It dips into human minds, scientific knowledge, and technological skills for the substance that it manufactures, sells and uses to create profits. With good research ability, natural resources per se in traditional forms become less important. For instance, natural rubber is not a necessity if you know how to make and use synthetic rubber, and you can well afford to do without silk when you have the ability to make nylon and other synthetic textiles. High-grade ores are no longer essential for economic operations.

Concomitant with the growth of research and the dynamic development of our economy has been the growth in size and capabilities of our colleges and universities and their outpouring of highly trained, educated people, useful in all branches of business and industry. The scientists and engineers so produced (and there never seems to be enough of them) not only made possible the rapid growth of research, but they have helped management make use of the advancements in science and technology quickly and profitably. At present, we hear much about shortages of scientists and engineers, and the shortage is a real problem. The law of supply and demand will tend to overcome this deficiency and we will learn to use our highly trained people more effectively to increase their productivity. This will not be easy. But the nation is alarmed and ultimately will find the answer.

THE WORKER RECEIVES A LARGER SHARE OF INCOME

One feature of our technologically-based economy that deserves special mention is the distribution of its benefits to our people. Anyone who cares to put out even a small

effort enjoys a degree of prosperity. The average American in terms of the goods and services his labor will buy is twice as well off as in 1929, the historic "plush" year in older-era American prosperity. The worker today receives the lion's share of the income resulting from his labor. Through the use of new production techniques, improved machinery, and more tools, he produces more than formerly. As a result, he receives higher compensation and so has more money to spend and can buy more goods. Thus, increased productivity sets up a cycle that operates beneficially to all segments of the economy.

Prior to 1924, the year of the introduction of the continuous strip mill in the steel industry, sheets sold at a higher price than they do today in spite of the fact that average wages have gone up between four and five times. In the meantime, output of steel sheet and strip has increased by a factor of nine. Similarly, technological advances have permitted the petroleum industry to sell gasoline at an increase in price of only 15% while all commodities have increased 69%. Wages of the refinery worker have increased 57% in the last nine years.

TRENDS DEVELOPED BY NEW PRODUCTS

You are acquainted with the growth patterns for various industries—know how these patterns are related to research, population growth, and gross national product. Similarly, you know that a newly developed product will give a decided upward trend to a company or industry until that product reaches market saturation, after which the growth curve tends to fall in line with population increase or with the trend of gross national product. What I would like to call to your attention particularly is this: Every time a new product creates a new industry, it also generates a powerful force that results in new research and still more products. As an example, consider the television industry. It grew out of the radio industry; went through a most dynamic development; and now apparently has reached the more flattened phase of its growth curve. All in the brief space of 11 years. But, think what the existence of this great, highly competitive television industry now means to future technological progress. With all these modern companies straining to make new electronic developments through which they can regain dynamism, research is being given a terrific impetus. Without the so-called "saturated" condition of black-and-white television, there would not be such incentives. The same thing is happening in the chemical and other dynamic industries. So it is that progress feeds on progress, and competition sharpens its pace.

Having reached a high level of economic prosperity, what of the future? What new developments are around the corner to sustain an expanding economy?

There is a never ending list of ideas for new products coming from our laboratories. Some will be successful; some will not. I will not attempt to prophesy which will have significant economic effect, but I am confident that many of them will be bases for future industrial growth.

During and since World War II we have consumed an important part of our rich mineral reserves. This has caused an emphasis on research on ways to find new deposits, to use lower-grade ores, and to provide substitutes

for materials in short supply. Such research is now paying off handsomely and is actually increasing our useable reserves even in the face of prodigious consumption of raw materials.

This progress in the discovery of new ore bodies has been based largely on the application of fundamental structural geology and principles of geophysical and geochemical prospecting. It indicates the best places to drill for ore and reduces the chances for misses. Thus, wild-cat holes pay off in mining as well as petroleum when based on good geological thinking. Intelligent prospecting has resulted in finding many new large deposits of ores in recent years. A most striking example of the success of these techniques has been the establishment of ample supplies of uranium in the past ten years. Furthermore, mechanical methods of beneficiating low quality ores have been improved, and are being applied economically even to rich ores. A good example is taconite iron ore.

Chemical processes have also been developed for the economic recovery of widely diversified metallic elements contained in a variety of ores that were too low grade or complex to even consider not so many years ago. Nickel, cobalt, copper, and other nonferrous metals are now extracted chemically from such ores. Sometimes these new processes for winning metals are not only economically successful, but provide other advantages to the processor. For instance, a metal recovered by a chemical process may be in a powdered form that can be converted directly to a finished product without going through the usual melting and refining stages. And useful by-products such as ammonium sulfate are made for sale.

In the chemical industry, prospects for continued growth are extremely bright. Hundreds of new developments are being made each year. The chemical industry has been so successful in its development of new synthetic chemicals such as plastics, rubbers, and fibers, and its research and management are so effective that we can be certain of a continuation of progress along present lines. Since an ample supply of raw materials is essential to the continued rapid growth of this industry, it is fortunate that so many chemical processes are based on petroleum, natural gas, coal, air, salt, sulfur, and water—all of which we have in plentiful supply.

ATOMIC ENERGY CREATES NEW PROCESSES

Atomic energy is, of course, one of the big new avenues for progress that lies ahead. Atomic reactors for submarines, surface ships, and stationary power plants are already creating new production opportunities and even new industries, such as those based on the fabrication of reactor fuel elements followed by reprocessing them for further use. These require completely new metallurgical methods for making the fuel element, and radically new chemical techniques for recovering values from the spent element. This means additional facilities. As applications of atomic energy grow in extent and diversification, such new opportunities will grow proportionately. The use of radiation from atomic fission will change the properties of materials and make possible the synthesis of new chemical products. This can lead to a completely new aggregation of materials and to

many new industrial processes. Isotopes, another by-product of fission, have already generated new industries for the manufacture of measuring and control instruments. It has been estimated that already industry saves \$400,000,000 a year by using these devices. Research currently in progress on the preservation of foods by atomic radiation shows some amazing results. This may cause revolutionary changes in our food industry. The successful harnessing of the atom for power means that the growth of our electrical industry can continue unabated in spite of the economics of conventional fuel supplies.

The success of our jet aircraft program and of the introduction of the prop-jet commercial plane, along with the recent performance of multi-engine jet transports, promise great things for the gas turbine in air transportation. Also, the current development of gas-turbine engines for locomotives, trucks, buses, and automobiles is encouraging. The tremendous effort being placed by the military on the development of guided missiles and space vehicles is bound to have revolutionary applications in our civilian economy. All these will create new industries to provide the special mechanical parts and new chemicals.

Communications is one of our most highly developed fields technically. Closely related to communications is automation and the electronic control of operations on the production line and in the business office. In communications and in electronics, generally, change is the order of the day. Many new ideas are being developed that will affect our economy profoundly. An example of a recent development that will have great impact on the whole electronics field is the semi-conductor which shows up in one form as the transistor.

The transistor, as you know, is a tiny piece of metal that does the work of the very much larger vacuum tube. Because of its compactness and efficiency, it makes possible the assembly of complex electronic circuitry in a relatively small space. This in turn makes feasible many tiny devices such as wrist-watch-size radios and, more importantly, extremely complicated yet small and not unwieldy machines for varied information-processing and communications functions. The complexity of electronic communications equipment has increased tremendously during the past several decades. Thirty years ago most telephone messages could be carried over open wire lines. At that time, only 3 or 4 messages could be carried over the same channel. The advent of coaxial cables permitted the simultaneous transmission of 3 or 4 thousand telephone messages over the same physical transmission lines. Microwave systems are now being developed with the capacity of 14,000 circuits, while in the future wave guides may carry as many as 400,000 messages at one time. Using present techniques, one such wave-guide system might require as many as 2 to 3 million electron tubes and 10 to 20 thousand kilowatts of power to operate. Such a machine would have been so huge and intricate as to have been completely impracticable prior to the advent of the transistor. The transistor offers the promise of the practical development of such complex systems. This is but one example of what research in the field of solid-state physics has to offer a changing and expanding economy. Research in this field possesses such

great potentialities that the tremendous strides made in recent years will be dwarfed by progress made in years to come.

Besides these few examples of actions already in motion that will have a revolutionary effect on our economy, thousands of new products and ideas are coming to light regularly. You hear of them daily. Individually they may not make more than a ripple, but taken together they may be more important in stimulating industry than any of the more important recent developments, atomic energy, for example.

SPURS TO BUSINESS ACTIVITY

These major forward steps on the technological front will be supplemented by important social and political actions that also will give impetus to economic progress. Thus, present national, state, and local plans for superhighways and expressways, improved supply and utilization of water, and additional sewage systems to care for a rapidly growing population are examples of actions that will spur business activity.

From outside our country will also come powerful stimulants. The economies of some of the countries of Europe are becoming highly dynamic. European industries are becoming increasingly mechanized at a rapid pace. This will permit the worker to earn more and so to spend more. Already Europeans are buying increasing numbers of automobiles, appliances, and other American-type goods. To a lesser extent, this is also happening in South America, Africa, and even Asia. And the trend will increase. A two-thirds increase in world population during the present century should be a guarantee of increased consumption of goods. These nations will become important markets for the world's raw materials and for American products in increasing degrees. International trade will flourish and we should find it easier to obtain larger quantities of raw materials that may not be in sufficient supply here to provide for our expanding needs.

All of you know, I am sure, that in this new, complex business world, the most important factor in the success of an enterprise is management. Management in industry is now exceptionally good and it is getting better. The men in the top positions are up-to-date on modern management, sales, and advertising techniques. They appreciate the need for good labor relations. They know the technology of their products. Many are technically trained. They conduct training programs for labor and management alike. They support research. Management is giving more attention to the planning of their programs than heretofore. They have or engage highly trained organizations to make market studies, economic surveys, systems analysis and human engineering studies, and operations research to set the stage for both immediate and long-range programs. Their philosophy is

based on the fact that business today is too involved to rely for its plans for growth or change on the experience and intuitive judgment of one or more men who happen to be in responsible control. For the most part, present-day executives are young, progressive, and dynamic. They are dedicated to the philosophy of change. They believe in growth and progress. They have the courage to scrap plants, processes, and products, thus creating requirements for new capital. It is their companies that will set the pace in the next couple of decades.

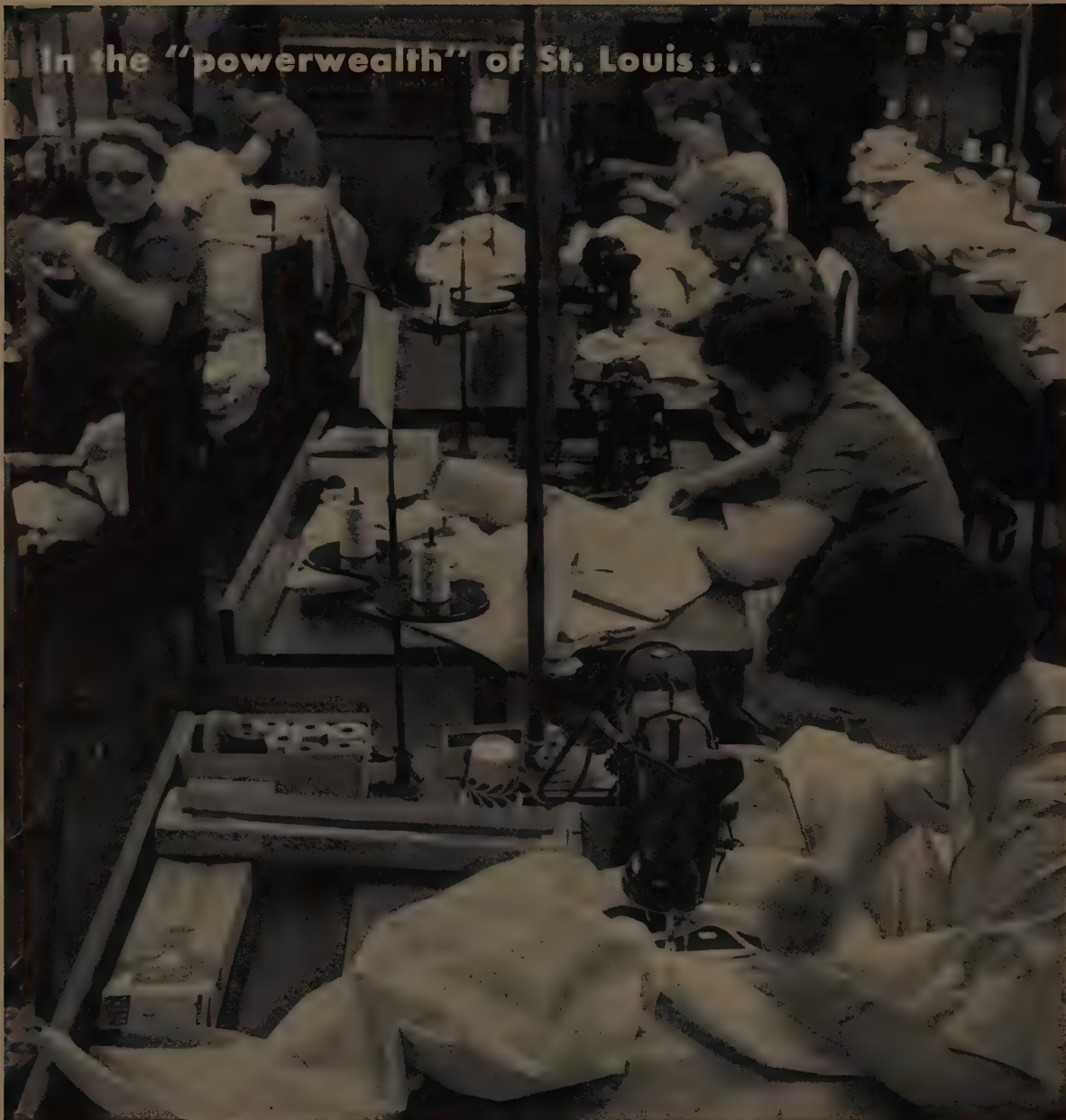
TECHNOLOGY GIVES GREATER VALUE TO NATURAL RESOURCES

And, as for natural resources, we still are richly endowed, especially since our highly developed research and technology give greater value to them. They permit us to use minerals that are harder to extract and of lower grade or purity. They make possible conservation of metals, provide substitutes of other substances for those in short supply, or they develop unusual materials for new applications. They effect better utilization of our water for industrial purposes, better agricultural and forest operations. In general, our research and technology not only give increased value to our natural resources, but they extend their life in a major way. Moreover, the use value of mineral resources has increased so much because of technological advancements that we can pay relatively more for minerals and so transport them greater distances. Witness the recent developments of sources for iron ore in Canada, South America, Africa, and Sweden to fill our growing steel demands and our shipment of coal to Europe.

In summarizing, let me emphasize that in appraising the future let us not fail to recognize the one great resource that has come of age in the past couple of decades. This is our big, strong, efficient industrial establishment, based on technology, our effective transportation and communications operations, and our American way of doing business. I mean by this our whole business structure and system of free enterprise. Its procedures have become highly developed, particularly in the past 20 years. They are capable, economical, effective.

To use the products of this highly efficient operation that is America, we have a people ever-hungry for more comforts, pleasures, and luxuries, and willing to pay for them through their individual efforts. A nation growing at the rate of 3,000,000 a year.

So our people, our nation, and our institutions are geared to expansion both in size and diversity. Our people want and demand new and better things. And all peoples of the world are gradually adopting this philosophy. With a wise government in both domestic and international affairs, continued progress seems inevitable.



In the "powerwealth" of St. Louis . . .

Noted as a fashion center with an accent on youth, St. Louis does an annual volume ranging from \$80 to \$90 million in wholesale sales to the "young fashion market" throughout the United States.

Union Electric produces three times as much power as the whole U. S. apparel industry uses

Total production of Union Electric in 1956: 7.4 billion kilowatt hours. Average annual consumption of the U. S. apparel and related industries: 1.9 billion kilowatt hours.

To serve its growing Midwestern area, Union Electric is constantly increasing its production to keep ahead of the thriving industries it supplies. Today's power production is so great it could meet the needs of whole segments of America's industry, such as clothing. Even more capacity is in the building stage to keep

pace with tomorrow's requirements for dependable, low-cost power.

Within the last ten years, many new major industries have located here. Among them: aircraft, soap, special metals.

We invite you to investigate the "powerwealth" of St. Louis as a location for your business. Write to J. E. Johanson, Industrial Development Engineer, 315 N. 12th Blvd., St. Louis 1, Missouri. UNION ELECTRIC, comprising: Union Electric Company, Missouri Power & Light Co., Missouri Edison Co.

PAST, PRESENT AND FUTURE—HOW UNION ELECTRIC HAS GROWN AND IS GROWING:

5 YEARS AGO—In 1951, Union Electric produced 5.25 billion kilowatt hours.

TODAY—Union Electric produces 7.4 billion kilowatt hours, an increase of 40%.

LOOKING AHEAD—Construction under way or planned will increase capacity another 29% by 1960.

GOODRICH RESEARCH — FORD ENGINE PLANT

The Field Trip

RICHARD W. LAMBOURNE

The Ford Foundation

The trip was underway promptly at the scheduled departure time of 9:45 a.m., with Sterling Clements of the Cleveland Trust Co. as manager. Some forty analysts were in the group, a capacity load for the bus, which proceeded through Cleveland and out into the beautiful southwest suburbs.

At the modern Goodrich Research Center in Brecksville, the analysts were met by E. A. Stevens, Vice President and Treasurer of the B. F. Goodrich Company. Mr. Stevens first outlined the organizational structure of Goodrich, with emphasis on its highly decentralized operating divisions. Next the group toured the entire Research Center with the benefit of skilled guides from the research staff who explained the many intricacies of laboratory processes and new developments in rubber and plastics.

Returning to the auditorium, Dr. Frank K. Schoenfeld, Vice President-Research, reviewed the research and development policies of Goodrich and, along with others from management, answered many questions raised by the visiting analysts. The group then was treated to a special film showing how Goodrich was the first to vulcanize a tire through nuclear radiation. Although this process was known at Goodrich theoretically as long ago as 1928, it had not been accomplished in fact until last year. Dr. Charles Stockman of Goodrich explained that while atomic vulcanizing is probably uneconomic at present, it has large potential advantages for the future.

VISIT TO FORD MOTOR

After luncheon at the Research Center, the group proceeded to Engine Plant No. 2 of the Ford Motor Company in Brook Park Village. Here they saw an immense marvel of automation, featuring the most modern production methods and equipment, as well as specialized electronic devices for engine testing. The Ford plants in Cleveland, including Plant No. 1, ship a large share of all Ford engines to company assembly plants throughout the nation.

The two engine plants, each built within the last few years, are separated by the Ford Foundry which services both plants. It is often termed the world's most modern foundry, with a special ventilating system, automatic core-making machines and numerous other features utterly distinct from old-fashioned foundry operations.

Ford Motor Company facilities in the Cleveland area also include a large modern Stamping Plant and Parts Depot. Altogether, the combined Ford manufacturing operations employ over 15,000 persons in and around Cleveland. For the analysts it was an exciting experience to see a sizeable part of these highly mechanized and efficient installations.

The "working day" ended with a relaxing bus trip back to the Hotel Statler in time for evening festivities.

B. F. Goodrich Company

E. A. STEVENS

Treasurer, B. F. Goodrich Company

IT IS INDEED A PLEASURE to welcome you to the research center of the B. F. Goodrich Company. The tenth annual convention of the National Association of Financial Analysts Societies has brought to Cleveland this week delegates from every part of the country and we deem it a privilege to be permitted to be host to this group for a few hours today.

We have brought you here to this auditorium at the outset of your tour not only to welcome you but to give you a brief outline of our company's organization and operations. This will only take about twenty minutes but may make your tour of the center more meaningful and instructive.

The B. F. Goodrich Co., now in its eighty-seventh year, has evolved from a small enterprise making just a few rubber products to a company manufacturing a wide range of different products in a multi-factory system stretching from coast to coast and beyond the borders of the country. This diversification, in large measure, has stemmed from the early and continuing emphasis on research and development which has always characterized our company. In 1895, B. F. Goodrich established the first research laboratory in the rubber industry and throughout all of the sixty-odd years since, we have been firm believers in searching out the new and improving on the old.

I think that the best way to give you a concept of the degree of our diversification is to take you quickly through the roster of our nine operating divisions but before doing so a word on organization structure is in order.

NINE INTEGRATED OPERATING DIVISIONS

We have divided our business, by a progressive program of decentralization, into nine integrated operating divisions. Each of these divisions is headed by a divisional president or general manager having full responsibility for the conduct of his division's business, including manufacturing, sales, development, engineering, accounting and treas-

ury functions. Each of these divisions is as close to an individual business as we can make it. Corporate staff divisions service, counsel and render coordinating assistance to the nine operating divisions. We believe that this type of organizational structure offers the best opportunity for furthering the growth and diversification of our company. It also provides a good framework for the training and development of management personnel for future expansion.

Now let us take a closer look at each of the operating divisions.

TIRE DIVISION

The B. F. Goodrich Tire Co. makes and markets a very complete line of automotive tires and accessories for the original equipment and replacement trade. Tires are produced for automobiles, trucks, buses, tractors, off-the-road earth-movers, industrial trucks and all the myriad wheeled vehicles including the lowly wheelbarrow. A product of this division's development group is the tubeless tire, now standard equipment on new automobiles. This division operates five plants, and has an extensive distribution system including 490 retail stores throughout the United States which market, direct to the consumer, products of our own manufacture as well as a wide line of consumer goods manufactured by others than ourselves.

AVIATION PRODUCTS

A second operating division is called the B. F. Goodrich Aviation Products Division. This operating group was established last year to handle the many aviation products which, up to that time, had been made and sold by another division of the company. It will bring to bear even greater emphasis on this important market with its great scope for growth and new product development. Currently the products for which this division is responsible include airplane tires, airplane wheels and brakes, fuel cells, de-icing equipment, Riv-Nut fasteners and products for airplane interiors.

INDUSTRIAL PRODUCTS

Another of our operating units is the B. F. Goodrich Industrial Products Co. Among the first products made by the founder, Dr. B. F. Goodrich, were air brake hose for railroads and canvas covered rubber fire hose. These products are still made by the industrial products company but they have been joined by hoses of all types and for all purposes; power transmission and conveyor belting; molded rubber goods; rubber lined tanks and equipment; rubber cements and adhesives; reclaimed rubbers; rubber thread and bands; a broad line of drug sundries; soles and heels for shoe manufacture and the shoe repair trade; and many other rubber products. In addition, this division manufactures plastic products such as the well-known Koroseal garden hose, rigid vinyl pipe, and Koroseal flexible materials for raincoats, shower curtains, upholstery and luggage.

FOOTWEAR AND FLOORING

At Watertown, Mass., is located the headquarters of the B. F. Goodrich Footwear and Flooring Co. This division manufactures and sells all kinds of rubber overshoes as well as canvas athletic and casual shoes. It also has a large

and growing business in the manufacture of three kinds of floor tile—rubber, vinyl and asphalt. In addition, a line of rubber and asphalt battery containers, and a line of rubber coated work gloves are made by this group.

The upsurge in popularity of the canvas casual shoe for home and resort wear by people of all ages has had a fine result on the business of this division, providing products selling in the summer to counterbalance the winter trade in rubber overshoes. The do-it-yourself trend in home improvement, as well as the generally good level of new building, is providing a good market for our floor tiling.

SPONGE PRODUCTS

The fifth of our domestic rubber using divisions is the B. F. Goodrich Sponge Products Division.; This division was created in 1954, in which year we acquired the Sponge Rubber Products Co. It has put B. F. Goodrich into the rapidly growing market for sponge products, an area in which our company had been relatively inactive. The division manufactures and sells Texfoam pillows, mattresses and cushions; Spongex cellular rubber sponge products of all types including carpet cushioning material; rubberized hair, which is another type of cushioning material; and many other products showing ingenious applications of the properties of sponge such as marine fenders, floats and buoys.

TEXTILE PRODUCTS

B. F. Goodrich Textile Products is another division having its own management. It operates textile mills in Georgia and Pennsylvania, primarily supplying tire cord and woven fabrics for the use of other divisions but also manufacturing fine cotton yarns for sale to the textile trade. This division is experienced in the handling of rayon and nylon as well as cotton and is flexible in its ability to supply varying requirements of products made from all three fibers.

CHEMICALS

Next in the list is the B. F. Goodrich Chemical Co. This division is engaged in the manufacture and sale of chemical raw materials basically stemming from our extensive research in the organic chemical field. It produces a broad line of polyvinyl chloride raw materials marketed widely under the trade name Geon. This material is also sold at market prices to other B. F. Goodrich divisions making plastic consumer products sold under the brand name Koroseal. This division is also a major producer of the B. F. Goodrich developed specialty synthetic rubber which we call Hycar. This specialty rubber has the property of resistance to the damaging effect of oil, a property which crude rubber and most other synthetic rubbers do not enjoy. Accordingly, it finds wide application in many fields and is a fast growing segment of our business.

Of interest in connection with Geon and Hycar is the fact that, at Calvert City, Ky., we have built plants for the production of vinyl chloride, the monomer material used in making polyvinyl chloride and acrylonitrile, one of the two principal raw materials used in making Hycar. This backward integration helps to strengthen our position in these two product areas.

The chemical company also manufactures anti-oxidants for use in rubber, petroleum and other products; plasticizers for the plastics trade; organic color pigments and special chemicals for insecticides, fungicides and cosmetics.

Last fall the chemical company started construction on a new plant to manufacture a completely new line of specialty acrylic polymers which will perform the function of thickening agents. Uses will include textile sizes, binders for foundry core sand, flocculating agents and additives for pharmaceutical cosmetic and latex paint formulations.

B. F. Goodrich Chemical Co. has four affiliates in the foreign field, located in England, Japan, Brazil and Mexico, which are each engaged in the manufacture of geon vinyl raw materials. We own from 25 to 45% of the equity stock in these affiliate companies. They also provide us income based on royalties on sales in return for continued technical assistance in the development of products and markets, as well as dividends on our stock ownership.

AN OPERATING DIVISION IN CANADA

B. F. Goodrich Canada, Ltd., is a wholly owned manufacturing and selling subsidiary with plant and headquarters located at Kitchener, Ontario, and we consider it one of our important operating divisions. It makes and markets a full line of tires and automotive accessories; industrial products of many types; and is also engaged in the distribution of footwear, chemicals and plastics. This division represents our company's primary stake in the rapid and healthy growth of the Canadian economy, with which our company intends to keep pace.

THE INTERNATIONAL B. F. GOODRICH COMPANY

Lastly, the International B. F. Goodrich Co. Division handles all of our business and sales abroad for all products except those made for sale in Canada and B. F. Goodrich Chemical Co. products. The latter division handles its own business. We have rubber manufacturing affiliates in twelve countries, the latest of which is a tire manufacturing affiliate in the Philippines, which just started production in October, 1956.

We have a minority stock participation in ten of these affiliated foreign rubber manufacturing enterprises, from which we obtain income from dividends. From all of the affiliates we receive technical fees based on sales for continuing technical information and know-how.

The international division has enjoyed participation in the healthy growth which has recently characterized the economies of many of the countries of the free world. This has come through sales of goods manufactured in this country and from sales made through several foreign selling subsidiaries marketing products made by our foreign affiliates.

While that completes the roster of our nine operating divisions, I should like to add one short word on our philosophy in conducting our foreign manufacturing affiliations, as already mentioned under the chemical company and international activities. We believe that our arrangement, whereby we have minority stock participation and technical assistance contracts, is the best way in which we can participate in foreign manufacturing outside of Canada. This results in having only a small part of our company's assets in-

vested abroad, other than in Canada, while permitting us to share in the growth of these enterprises.

I should be remiss at this point in giving you a picture of the scope of B. F. Goodrich interests if I failed to mention Goodrich-Gulf Chemicals, Inc., which, while not a B. F. Goodrich division, is none-the-less an important interest for our company and its stockholders.

GOODRICH-GULF CHEMICALS

Goodrich-Gulf Chemicals, Inc., was formed in 1952, with stock ownership held equally by B. F. Goodrich and Gulf Oil Corporation, for the purpose of exploring projects in the petro-chemical field in which the parent companies have strong complementary interests. Among those interests have been leadership in the synthetic rubber program, launched during the early days of World War II and continued, until the spring of 1955, under Government ownership but with private industry operating the plants as agent for the Government.

Following the passage of Public Law 205, authorizing disposal of the Government's rubber producing facilities, Goodrich-Gulf Chemicals bid successfully for an undivided half interest in the nation's largest butadiene plant at Port Neches, Texas, and for one of the largest rubber making plants, also at Port Neches. After about a year of hard negotiation and Congressional review of the disposal program, ownership of the facilities already mentioned passed on April 29, 1955, from the Government to Goodrich-Gulf Chemicals, Inc. In the spring of 1956, Goodrich-Gulf Chemicals was the successful bidder on the 120,000 ton a year capacity copolymer plant at Institute, W. Va.

Before leaving Goodrich-Gulf Chemicals, mention should be made of a major scientific achievement of that organization's research teams. In December, 1954, it was announced that Goodrich-Gulf researchers, working here at the B. F. Goodrich research center, had finally succeeded in reproducing synthetically the true molecule of crude or natural rubber produced by the rubber tree. A pilot plant has been completed and started production of the new material in October, 1956.

As I mentioned earlier, much of our diversification and many of the businesses in which we are now engaged stem from our research activities over the years. This research center is serving all of the operating divisions which I have just described and also is doing much pioneering research from which will come new products and new businesses for B. F. Goodrich.

LONG RANGE OUTLOOK FOR RUBBER

This has been a capsule outline of our company's organization and operations. Since you are analysts and interested in future trends, I should like to take a moment or two at this point to give you our ideas as to the long range outlook for the rubber industry and to make some observations regarding the future rubber supply situation.

All our long range projections indicate a continuation of the growth trend of the past few decades. Using new rubber consumption as the best available yardstick of physical volume, let us see what has happened in this country. In 1930 we consumed 376,000 long tons; in 1940 it was

651,000 long tons; in 1950 it was just over 1,200,000 long tons. The rate of growth, of course, was not as uniform year by year as these decade figures indicate.

In looking forward to 1960, we have made studies of the population trend, vehicle registration trend, gasoline consumption outlook, general economic growth and factors which will bear on the non-transportation segment of the rubber industry. These studies lead to the conclusion that new rubber consumption in the United States will exceed 1,600,000 long tons by 1960—and we think this is a conservative estimate. This growth will not all come from the expansion in tire usage but will be general, across the board, in all kinds of rubber products.

Now, as to the world outlook for new rubber supplies. Rubber is a world commodity, finding usage in practically every country in the world on an expanding basis linked to the degree of industrialization and betterment of living standards in the various areas. Therefore, we must consider the world picture, not only in terms of total supply but because it highlights the growing world dependence on man-made rubber.

As the years have gone by, the world demand for new rubber has kept on increasing. World new rubber usage in 1954 was 2,460,000 long tons; in 1955 it was just under 3,000,000 long tons, and by 1960 we expect it will exceed 3,500,000 long tons. Against this growing demand trend, consider the fact that world capacity for the production of natural rubber from trees probably will average not more than approximately 1,850,000 long tons per year for the next several years. There has been relatively little new planting of rubber trees during the past twenty-five years, so that there are no large areas of immature plantings which might add to the present world natural rubber capacity in the near future. Since it takes seven years to raise a rubber tree to producing size, it would not be possible, even if the capital were available, to substantially increase world natural rubber production by this method prior to 1963 or 1964. Therefore, it is obvious that there is an economic need for large and increasing quantities of man-made rubber to complement the available supplies of natural rubber.

Of course, natural and man-made rubbers are competing as well as complementary materials. There should continue to be a market for natural rubber, an industry of vital importance to the economies of several of the Far Eastern countries, providing its price level is competitive with the man-made rubbers.

NEW MAJOR PROJECT

To revert to B. F. Goodrich. I should like to highlight several major projects which are under way but which have not yet had time to reflect in our earnings.

(1) An ultra-modern unit for the production of giant off-the-road tires for construction, dam and highway building uses is currently being brought into production in Miami, Oklahoma, representing an investment of four million dollars.

(2) Expansion of the company's Los Angeles, California, manufacturing facilities at a cost of six million dollars is near completion and will be in operation in 1957.

(3) Expansion of our polyvinyl chloride facilities at Avon Lake, Ohio, is under way at a cost of nearly \$8,000,000 and will be in operation soon.

(4) A three and one-half million dollar polyvinyl chloride plant has just been completed in Wellington, Ontario, Canada, and is now in production. This plant will serve the growing Canadian market for this product.

(5) A new modern hose manufacturing plant has just begun production in Kitchener, Ontario, Canada, thus putting B. F. Goodrich Canada into the hose manufacturing business for the first time.

(6) The B. F. Goodrich Sponge Products Division's foam rubber expansion in the United States substantially increased its capacity and put the company into the foam mattress business for the first time. This expansion was made at a cost of \$3,500,000.

(7) The plant being erected at Calvert City, Kentucky, to manufacture a new line of acrylic polymers has already been mentioned. This will represent an investment of \$2,500,000.

(8) Recently completed large expansion of facilities for production of specialty type man-made rubbers will capitalize on constantly developing new uses and should reflect consistently expanding volume.

(9) A new five million dollar chemical plant, announced month before last, is under way near Henry, Illinois. This plant will manufacture specialty organic chemicals such as new anti-oxidants for use in the petroleum, rubber, plastics and other industries.

The above mentioned items by no means represent all of our capital expenditure projects but serve to indicate the faith we have in our ability to continue our past record of growth.

I hope that these few remarks have given you a concept of the ramifications of our company operations. It would obviously take much traveling and many days to show you current production operations. We thought, therefore, that viewing this great workshop of science and observing its equipment and personnel at work would interest you and indicate to you that B. F. Goodrich is ever on the search for the new products which will contribute to a better tomorrow.

NACA LABORATORY — FORD MOTOR

Highlights of Trip

PAUL H. GAITHER

Gaither & Co.

AMONG THE GREAT INDUSTRIAL and research establishments visited by National Federation of Financial Analysts Societies members during the Cleveland Convention was the Lewis Flight Propulsion Laboratory of the National Advisory Committee for Aeronautics. About 100 were present on Wednesday, May 22nd, to see the facilities which are helping to keep America's airplanes and missiles superior to those of our potential enemies.

Lewis Laboratory is one of three major research establishments operated by the National Advisory Committee for Aeronautics and is the top aeronautical research organization of the Federal Government. Dr. James H. Doolittle is Chairman of NACA's 17-member "board" whose members are appointed by the President of the United States, and serve without pay.

The business of the NACA is scientific laboratory research in aeronautics directed toward practical solution of the problems of flight. Scientific knowledge gained by NACA is used by the military services and the aircraft industry in the design and development of improved aircraft and propulsion systems.

To obtain this knowledge, NACA operates Lewis which was established on a 200-acre site adjacent to the Cleveland Hopkins Airport in 1941; the Langley Aeronautical Laboratory started in 1917 near Hampton, Virginia; and the Ames Aeronautical Laboratory began in 1939 near San Francisco, California. The NACA also has smaller facilities at Wallops Island, Virginia, where rocket-propelled models are studied; at Edwards, California, where transonic and supersonic flight research is conducted with special research airplanes; and, now under construction near Sandusky, Ohio, the Plum Brook Research Reactor Facility, where problems of nuclear aircraft propulsion will be studied.

Lewis' 2700-man staff of scientists, engineers, and technicians are primarily engaged in the investigation of problems of aircraft powerplants and their components, including the special supersonic aerodynamic problems relating to high speed propulsion. (Research on wings, bodies, controls, and other aircraft components is conducted at Ames. Work at Langley covers aerodynamics, hydrodynamics, structures, stresses, and allied fields). Some of the investigations at Lewis are combustion, fuels, lubricants, propulsion system structures, high-temperature materials, engine controls, and cooling. All types of modern and future air-

craft propulsion systems and their components are studied, including turbojets, ramjets, rockets, and nuclear powerplants, and long range ballistic missiles.

Calculations indicate that if the missile is going to destroy a target, the rocket motor must operate so efficiently that when it shuts off, the velocity of the ICBM will be accurate to within 1 part in 20,000. Likewise if one percent of the propellant is not used, the miss may be measured in hundreds of miles. That means the whole burning process must be combustion perfect, and it must come to its end within a small fraction of a second of the planned time.

Fuel surging and boiling, combustion buzzing and destructive screech, the design of bearings and seals, the development of pump lubrication systems operable at temperatures as low as boiling hydrogen, 424 degrees below zero Fahrenheit, are some of the specific problems which must be overcome.

Over \$100-million research facilities are in use at Lewis. The National Federation of Financial Analysts Societies tour included the Ten by Ten-Foot Supersonic Wind Tunnel, the Central Automatic Data Processing System, the Engine Research Building, and the Rocket Operations Building.

The Ten by Ten-Foot Supersonic Wind Tunnel is the newest wind tunnel at the Laboratory. Full-sized powerplant installations and components up to five feet in diameter can be studied in its 10-foot by 10-foot stainless-steel test section. Seven electric motors producing 250,000 hp and two multistage compressors will produce test conditions of speeds from 1500 to 2500 mph and altitudes up to 30 miles. A closed circuit television system permits remote monitoring of tests within the tunnel.

The Central Automatic Data Processing System receives raw data on a 24-hour basis from five major facilities of the Laboratory. Data signals are sent to the central automatic digital data encoder (CADDE) where it is recorded on magnetic tapes and can be returned on typewriters or facsimile receivers as raw data to the control room of the originating facility. Data may also be fed into the ERA 1103 "electronic brain," for immediate final calculations of end results.

The Engine Research Building occupies five and a half acres and contains about 100 test stands for investigation

of components of propulsion systems. Studies are conducted here on turbojet engine air compressors, combustors, and gas turbines. The central control room for air service scheduling and its distribution control throughout the Laboratory is also located here.

The Rocket Operations Building is the control center of the rocket laboratory where thrust producing devices which carry their own fuel and oxidant are studied. Here various rocket engine configurations, fuel injectors, nozzles, fuel ignition and combustion with a variety of fuels and oxidants are tested to determine their effects on thrust development.

FORD MOTOR COMPANY

After a luncheon as guests of the Ford Motor Company, the delegates saw automation in action at Ford's Cleveland Engine Plant No. 2 and Foundry. The newest of four Ford Motor Company manufacturing operations in the Greater Cleveland area, Engine Plant 2 began operations in February, 1955.

The financial analysts also heard Ray H. Sullivan, Ford group vice president, discuss the growth of automation within the Ford Motor Company and the broad effects of automation upon the company's whole manufacturing process. In the process of coming of age, some of automation's earlier, more spectacular symbols have become outmoded by engineering "know how" and experience.

The new plant contains the latest equipment obtainable from the combined skills of automation equipment designers, plant layout experts and machine tool manufacturers. Mr. Sullivan calls Engine Plant No. 2 "the finest installation of its kind anywhere in the world." It lives up to the ideal of automation recently expressed by a Ford executive in these terms: "We visualized long, clean production lines along which intricate parts would flow smoothly and evenly—just as fast as modern machine tools could handle them."

Engine assembly operations also have been advanced at the new plant. Mechanical arms—another Ford first—carry the engines through all assembly and testing operations at a height convenient for assemblers. The engines can be rotated to any position or angle so that each surface of the engine is readily accessible for precision assembly.

To insure quality assembly, thousands of mechanical and pneumatic gages, each designed to check specific dimensions or relations for accuracy, are spotted throughout the plant.

Located adjacent to the assembly area are hot test stands on which each engine produced in the plant is tested. Only those engines which pass this critical 20-minute test are shipped to assembly plants for installation in customers' automobiles.

Engine Plant No. 2 contains 862,000 square feet of manufacturing floor space and at the present time is producing Ford V-8 and six-cylinder engines.

The plant employs approximately 3,000 persons and has an annual payroll in excess of 15 million dollars.

Adjacent to Engine Plant No. 2, the visiting financial analysts toured the world's most modern foundry, a vital factor in the production of engines for Ford and Mercury passenger cars and Ford trucks.

Among the many outstanding innovations in the Foundry is a special ventilating system which brings about a complete change of air every 12 minutes to insure working areas that are free of dust, smoke and fumes.

Another outstanding feature of the Foundry is the arrangement of core-making machines to permit production of more cores with less motion and fatigue on the part of machine operators. Sand for cores is mixed in a central place by eight sand mixers and delivered by pneumatic system. A huge indoor sand drying and handling area has a capacity of 54,000 tons.

In the cleaning area, giant automatic machines grind metal fins and flash from cylinder blocks and heads eliminating difficult, heavy cumbersome work by employees.

A wet refuse disposal system facilitates easy and thorough housecleaning in the entire Foundry. Cooling conveyors for block and head castings are located in specially ventilated galleries. All small parts hot-casting conveyors are located in the ventilated basement, eliminating smoke and minimizing heat in the molding area.

The Foundry has 12 cupolas and 10 metal pouring lines. Overhead metal delivery cranes carry the metal from the cupolas to the pouring lines. Specialists in Foundry's modern laboratories keep a constant check on the quality of the metal insuring first class castings for the nearby engine plants.

The Foundry employs approximately 3,700 people and has an annual payroll of more than 20 million dollars.

Goodyear Tire—General Tire

Trip Manager: BEN J. ANSLEY

First National Bank, Akron, Ohio

Buses left Hotel Statler at 8:30 a.m. and upon arrival in Akron the group gathered in Goodyear Hall, where the rubber exhibit is located. The analysts were welcomed by some of Goodyear's top management and business research men. A bus then took the group to the testing laboratories; to Plant 2, to see the mechanical goods production line; to the Rim plant, and to Plant "C", to see the vinyl and foam rubber products. The aircraft department was visited next, where the analysts saw everything that could be shown without being in violation of government restrictions.

After lunch as guests of Goodyear, the group moved to General Tire headquarters for a management conference with Chairman William O'Neil and other executives. A highlight was a discussion of Aerojet General by an official of that subsidiary.

how to keep customers' customers happy



One problem is basic to manufacturers of raw materials: how do you make sure that the use of your products by other manufacturers satisfies the ultimate customer, and how do you promote the quality of your products at the retail level?

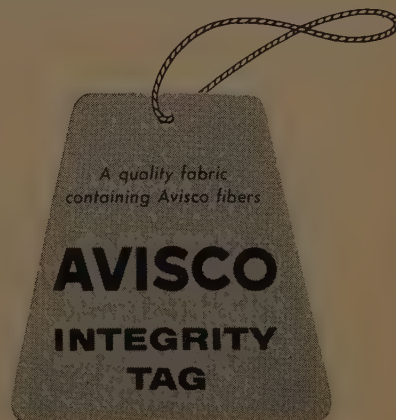
In 1955 American Viscose Corporation launched an idea that is answering these questions. It is a simple identification tag appearing on increasing numbers of apparel, carpets, bedspreads, and other home furnishings made with AVISCO® fibers. This tag—the AVISCO “Integrity” Tag—signifies that high standards of quality have been met all the way back to the basic fiber. Only those manufacturers, converters and finishers who agree under binding requirements to meet the standards of the program are licensed to use the AVISCO Integrity Tag.

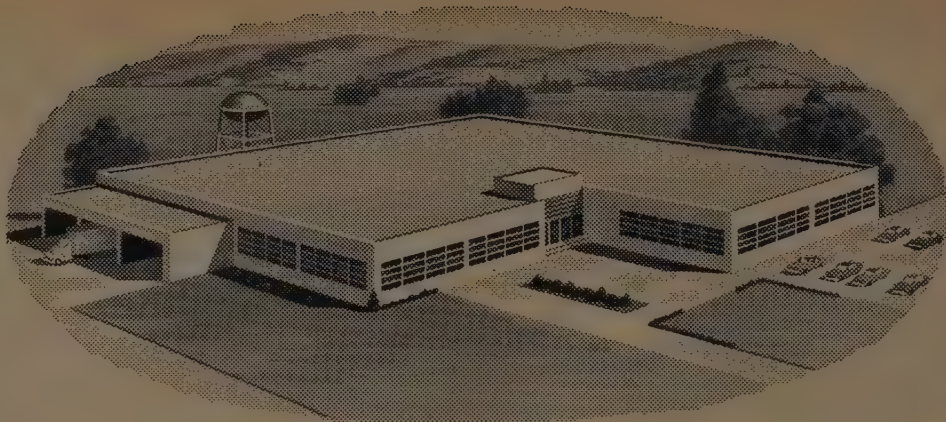
Evidence of the acceptance and growth of this idea is contained in the following list of products marketed in the past 20 months that have qualified for the AVISCO Integrity Tag.

1,600,000 bedspreads
30,000,000 square yards of carpeting
5,000,000 pieces of wearing apparel
500,000 blankets

More and more manufacturers are requesting and qualifying for the Integrity Tag every day, knowing that it is a sales aid for them as well as for American Viscose Corporation.

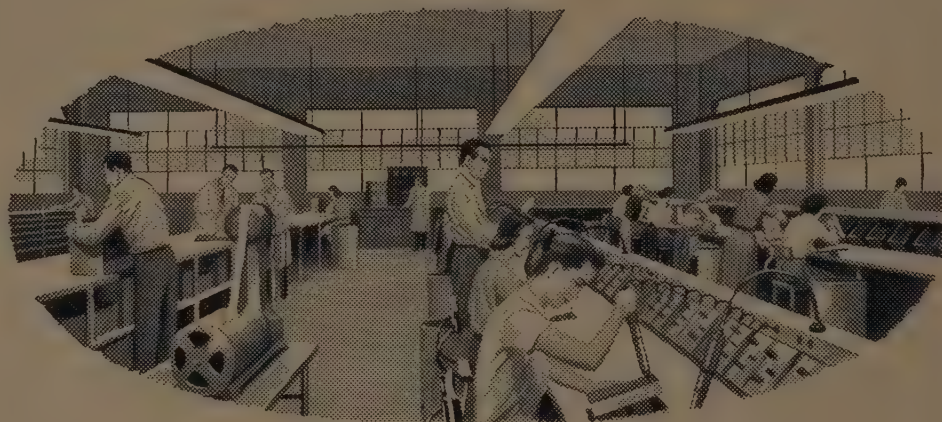
The Integrity Tag program is one way American Viscose is combining its creative and production resources to capitalize on the broadening markets for AVISCO products.





PLANTS LOCALLY FINANCED PRODUCTIVE LABOR

*Reprint
of
current ad
used in
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CLEVELAND ELECTRIC ILLUMINATING CO.

Cleveland Electric Illuminating Company representatives from the financial side of the company's business, as well as those from the Area Development and Steam Power Divisions, accompanied the group. At Eastlake plant the analysts had the opportunity to see coal-drying facilities for the 108-mile coal pipeline. This pipeline was built by the Pittsburgh Consolidation Coal Company, and it represents a pioneering action on the part of both the Illuminating Company and Pittsburgh Consolidation Coal Company.

After lunch at Hellriegel's, President Lindseth spoke on atomic power; F. Warren Brooks, vice president—finance, on some of the financial aspects of the company's operations, and R. C. Hinton, vice president—marketing, spoke about the company's area development program. A question and answer period followed.

The return trip was planned to give the analysts an opportunity to see some of the company's load—industrial, commercial and residential.

The Atomic Power Picture

ELMER L. LINDSETH

President, The Cleveland Electric Illuminating Company

IT MIGHT BE HELPFUL if we start by defining just what atomic power is. How do we translate the fission of the atomic nucleus into useful electric energy?

Most electric power the world over is made today by burning a fossil fuel—coal or oil—and using the resulting heat to produce steam. The steam goes through a turbine, causing it to revolve, and the turbine drives the generator which produces electricity.

Nuclear power differs from conventional power only in the type of fuel used. Instead of fossil fuel burned in a furnace, we substitute a nuclear reactor. Nuclear fission is accompanied by the generation of very large amounts of heat. In an atomic bomb, the release of this heat energy is instantaneous, and happens with explosive violence. In a power reactor, the chain reaction takes place much more slowly, and the heat is released at a controlled and controllable rate.

That heat is absorbed by a fluid—sometimes water, sometimes a liquid metal like sodium, sometimes a gas like carbon dioxide or air. This heated fluid then flows around pipes containing water. The heat is transferred to the water, which evaporates into steam, and the steam is then used to drive a turbine just as in a conventional power plant.

The same general principle applies in a nuclear powered submarine or ship. The reactor in a submarine makes steam

which drives the steam turbine and, with or without the electrical intermediaries, turns the propeller.

Aircraft propulsion is a little different. A jet engine uses the heat in conventional fuel to create a reactive thrust, driving the aircraft forward. The concept of aircraft propulsion by nuclear power involves the release of heat energy in an engine not unlike a modern jet engine, to provide the thrust that propels the plane. All this calls for complex equipment, machinery, instruments and controls, which in the aggregate comprise large capital investments.

There is a very popular misconception—encouraged by extravagant stories in the Sunday supplements and irresponsible statements by various people—that nuclear power will some day be as free as air, as abundant as water, so cheap that there will be no point in metering it. That is false. Nuclear power will never be that cheap.

In fact, in every part of the United States nuclear power is having a very rugged fight to become as economical as power generated from coal or oil. Economically competitive nuclear power in this country is a long way off.

In other parts of the world, it will come sooner. This is because fossil fuels are more costly in other countries. But nowhere, and at no time, will nuclear power be as dirt cheap as some have claimed.

Now, what is the status in the United States of the development of electric power from nuclear reactors? The total number of reactors of all types—research, development, power, and propulsion—built, or building, or in the planning stage in this country is 231. This is a very substantial number.

FOURTEEN PROJECTS IN THE UNITED STATES

There are fourteen projects in the U. S. aimed at producing civilian electric power and being carried forward by the investor-owned segment of the electric utility industry. Seven of these are in construction or in the immediate pre-construction phases, while the other seven are in the planning and development stages. Sixty-nine companies, from the Pacific to the Atlantic and from Mexico to the Canadian border, are engaged in these fourteen projects.

On completion these projects will deliver about a million and a half kilowatts of electric power. This is not a large amount of power. It is actually somewhat less than the aggregate capacity of the Cleveland and Electric Illuminating Company's system today. Nevertheless, it is a significant contribution to the country's power resources. It represents an investment cost to the utility industry of some \$400 million.

In addition to these 14 investor-financed projects, there are in the United States at least four public power projects, smaller in size and financed differently. Altogether, then,

there are at least 18 civilian power plants or projects to be in operation in this country by 1962. And the Atomic Energy Commission has officially stated that more are contemplated.

Recently, an announcement was made of the launching of yet another project, one of great significance. A group of eleven utilities in the Southwest, in cooperation with the General Atomic Division of General Dynamics Corporation, have formed the Texas Atomic Energy Research Foundation. Work has already started on a four-year, \$10 million program to research the production of electricity from atomic fusion—the thermo-nuclear process used in the hydrogen bomb. The announced aim of the program is “an understanding of heavy hydrogen reactions at high temperatures under controlled conditions.”

Now, about other phases of the atomic reactor industry in the United States. Last year, 1956, the American nuclear industry received contracts for or began actual construction on 59 new reactors. Thirty of these were research and test reactors. Twenty-nine were power reactors of various types, including electric power, ship propulsion, submarine propulsion, army package power plants (the kind of reactor that can be dismantled and flown to Greenland or the North Pole), and aircraft propulsion plants.

These reactors embrace basically eight different types or concepts, because there are still wide variations of opinion as to which type of reactor will prove to be the best. We have not yet frozen any single design in this country, because research and development are moving so fast.

EXPORTS

How about export? The United States has bilateral agreements with a large number of foreign nations—something over forty. We have in production for export today under the bilateral program twelve research reactors, on a firm commitment basis, and six power reactors. We have under very active negotiations four more—three research reactors and one power reactor.

You have probably seen in the press reports of our negotiations and contractual commitments with Italy, Belgium, the Dominican Republic, Brazil, Cuba, Mexico, the Philippines, and West Germany. There are many others.

The United States is definitely in top position in the international atomic picture, because we have the edge in know-how, technology, and manufacturing facilities.

True, great interest has been attached to the British program. The Queen dedicated a fine reactor last Fall when she threw the switch at Calder Hall. Does that make Britain the world leader in civilian nuclear power? In my opinion, it does not.

While I was in England recently I attended a small group meeting in which we Americans were in effect appraising the British nuclear program, and they were explaining it. Sir Edwin Plowden, Chairman of the British Atomic Energy Authority, opened the discussion by saying he had heard a neat story touching on this question of who's better or who's best.

He said the question had been asked, “Which is better, an elephant or a whale?” The answer, of course, is, “An elephant is better in the bush, a whale better in the ocean.”

The point of his story was that Britain has a peculiar set of circumstances which justify and require a certain course of action in nuclear power development. The same course of action would not at all fit the United States. This country has a set of circumstances which dictate a wholly different course of action.

THE BRITISH SITUATION

In appraising the British situation, we must bear in mind two factors. One is that Calder Hall, Britain's first nuclear electric generating station, is primarily a weapons plant. Its principle function is to manufacture plutonium, which is used in atomic weapons. Calder Hall is located on the site of Windscale, which is the British Atomic Energy Authority plutonium producer.

So, although Calder Hall does generate some 70,000 kilowatts of useful power, this power is incidental, and the British are the first to point this out clearly.

Nevertheless Calder Hall is going to be duplicated in other plants to be operated by the British Electricity Authority—notwithstanding that nuclear power from a Calder Hall is more expensive than electric power made from coal or oil.

Why this seeming waste of money? The British were very outspoken and frank in explaining the reason. Lord Citrine, the chairman of the Central Electricity Authority, has stated it in writing, and it is widely understood. Basically, the reason is this: by 1965, Britain's electric energy consumption will require 70 million tons of coal a year for the Central Electricity Authority. Today, the Authority uses about 42 million tons of coal a year. The British Coal Authority—Coal Board, I believe it's called—has told the Central Electricity Authority that the productive capacity of the British coal industry will not allow more than 53 million tons for power generation in 1965. They will be short 17 million tons of coal, which they cannot produce and which, dollars being as tight as they are, they cannot buy.

With that prospect, Britain entered into two very important oil contracts a year ago to fill this gap between available coal and required coal. One contract was with Esso, for Venezuelan oil; the other was with the British American Oil Company, for Near East oil.

Then came the Suez crisis. And now Britain realizes that it will not have coal, and that it cannot rely either on the tenuous lifeline for oil. So the British are in a crash program to insure adequate electric power.

The British are concentrating their technical efforts on a single type of reactor known as the gas-cooled reactor. Flowing past the fuel elements is a stream of pressurized CO₂, which goes through a heat exchanger, makes steam, and drives turbines.

The new and bigger generating stations which are planned represent an expansion of British goals to five or six million kilowatts of nuclear power capacity by 1965. This is a measure of the desperate situation posed by the Suez Canal.

Determining the cost of power produced in the Calder Hall station is an almost impossible task. What will the credit be for weapons material produced? Plutonium has

only a single buyer—the government. What will be the cost of reprocessing fuel elements? What will be the cost for initial fuel? Free enterprise economics, in the sense of taxes, interest charges, and other things, simply do not apply. Cost data, in this case, are quite unimportant, and in any event are not at all comparable to the kind of cost thinking we need to do in our business.

Britain does have within the United Kingdom the components required for nuclear power — that is, adequate uranium, and the components of reactors such as concrete, steel, electronics, controls, manpower, and manhours. On the other hand, Britain does not have a dependable coal supply, and Britain does not—or certainly not within the British Isles—possess an oil supply.

The British have fine research scientists, and they are doing excellent work. Sir John Cockcroft, who heads state technical efforts there, is, of course, one of the world's renowned scientists in this field. They are working on a fast breeder reactor, as we are in America, and they are also doing research and development on other types. But their basic effort is directed toward a single design which they have practically frozen. This is the gas-cooled reactor. It is not the most desirable type, or the ultimate type, but it is the one which the British feel they can make work, and which indeed they must make work in the light of the circumstances I have mentioned.

THE FRENCH SITUATION

How about France? France is quite a bit behind, and is trying desperately to catch up. France has had, and still has, virtually no atomic military program. However, the country does have adequate resources of natural uranium. The principal effort of the French today is directed toward getting information. France does have substantial resources of coal, as well as excellent hydro-power resources in the Alps and the Pyrenees.

Consequently, a hydro-power plant can be built in France today more cheaply than a nuclear power plant. And as far as operating expense goes, a hydro plant, being powered by falling water, has a literally zero fuel cost. The maintenance problems are negligible; the operating problems are nil; the ease and convenience of the technology are known to all of us.

A nuclear power plant, on the other hand, is a complicated thing to operate, even if the nuclear sources and the chemical processing were free—which they are not. Construction and operation technique are involved, and the useful life of the plant, I am sure, would be considerably shorter than that of a hydro plant. So for the next ten or fifteen years, France foresees that hydro will continue, as it does now, to provide half of its power needs.

There is one nuclear power plant operating in France, at Marcoule, near Marseilles. Although it produces an electrical output of 5,000 kilowatts, it is, like the British plant, a producer of plutonium for weapons. It is run, not by the French Electricity Authority, but by the French Atomic Energy Authority. And it uses more than the 5,000 kilowatts it produces for the operation of the reactor—the fans, pumps, and so on; so it has no power for export.

Actually, the electric power phase of this reactor was an afterthought. The reactor was designed and under construction when it became prudent, for reasons I'm not familiar with, to make an electric generating plant out of it. So they put a heat recovery device on the tail end of it, to generate power.

The same thing could easily have been done with many reactors now operating in the United States. We have the finest plutonium-producing reactors in the world, and vastly more of them than all the rest of the world put together. If we had added a heat recovery device on the tail end of a reactor at Hanford, or Oak Ridge, or Savannah River, ten years ago, much of the current concern about America's place in the international atomic scheme of things would have been eliminated. As you may know, the heat from the fission of a production reactor at Hanford is dumped into the Columbia River. Had we put a power plant there, of anything from a hundred thousand to five hundred thousand kilowatts, much of the misunderstanding would have been eliminated.

We did not, because we have stayed with the single-purpose reactor concept. We have maintained throughout our program that if a reactor is a production reactor—meaning one for the production of weapons material, plutonium—then we would not compromise its effectiveness at that job by requiring it also to make power. Neither would we attempt to compromise a power reactor by having it make plutonium for weapons. Both the British and the French programs, basically, are associated with the production of weapons material.

RUSSIA

How about Russia? What's going on behind the Iron Curtain? Well, you have access to as much information as I have, which is basically what we read in the public press or the magazines. We do know that the Russians made a very creditable presentation at Geneva. They announced, and there is every indication that it is true, that they are operating a 5,000-kilowatt reactor. Since then, they have announced a rather ambitious program for 1960—two and a half million kilowatts generated atomically. It is apparent, however, that this program has slipped, because recent re-announcements of starting dates indicate that these projects have fallen behind original schedule.

There has been mention in the press of a large reactor for Czechoslovakia, of 150,000 kilowatts; also one for East Germany. Again, I have no more information than you do; and what information we all have is, I think, strongly colored.

EURATOM

How about Euratom? Euratom has been much in the public press in the last three or four months, certainly when the "Three Wise Men" were here. The program they have set for themselves is extraordinarily ambitious—15 million kilowatts of atomic power by 1967. Euratom is, I am sure all of you as students of world affairs know, the Atomic Energy Community for six countries in Europe: France, West Germany, Italy, the Netherlands, Luxembourg and Belgium. One central atomic energy authority will serve

these six European countries with a coordinated program of research and development. Thus they will avoid duplication and control their source materials, chemical processing, and fuel element fabrication.

The atomic energy program envisioned by the six countries in Europe is two and a half to three times as large as the British program. And imagine the circumstances in which they are launching it! They have no nuclear industry today. They have no manufacturing know-how in the nuclear field. Their ability to finance such a program remains to be demonstrated. I can only repeat that they have set for themselves an extremely ambitious goal.

Its accomplishment will require, within ten years, the building up at an extraordinary rate of technical know-how, engineering manpower, and manufacturing capacities. They cannot import all the equipment they need from the United States; the dollar requirements would be beyond their reach. They must keep imports to a minimum.

ASSISTANCE NEEDED

The plan will, however, require our thorough cooperation. Not only can we contribute technical know-how, but we can contribute to their manufacturing too—possibly by sending them one reactor and, under a licensing agreement, allow them to develop through their manufacturing technique the opportunity to build two, three, five, ten more.

Fifteen million kilowatts is a very substantial amount of nuclear power. If the Euratom countries achieve it, they will be generating more power from the atom in 1967 than the United States. So it represents a tremendous effort. I am personally looking forward to following it with real interest, as I think you are too. Certainly all of us must feel encouraged by the development in Europe of such concepts as the Common Market and the Iron and Steel Community. The nuclear program will be indicative of their ability to achieve some of those goals we all want to see them reach.

UNITED STATES LEADS IN TECHNICAL KNOWLEDGE

Now, what does all this add up to?

First of all, if facts make any sense, they show that the United States is far ahead of all the rest of the world in technical know-how, engineering ability, and manufacturing facilities in the nuclear power field. There is no question of that in my mind.

Second, we are in a very interesting situation regarding economic nuclear power—in other words, power generated from fissionable materials which will be as cheap as power made from coal or oil. Economically competitive nuclear power will come to the United States later, possibly much later, than it will to many other countries where coal and oil are two or three times more expensive than they are here.

Now that is basic, and we must understand it. For a long time, the American atomic power program must remain a research and development program, aimed at serving an ultimate end rather than meeting an immediate need. Apart from the question of international prestige, we do not have in this country any compelling reason for a full-scale nu-

clear power program, because of the abundance of our fossil fuel supply.

A third point: nuclear power progress, both here and elsewhere, is going to be slower than was thought two or three years ago, or even one year ago. The costs of the projects under way in the United States are rising at a very rapid rate. Projects which a year ago were estimated to cost X millions of dollars are now being found to cost one and a half times X, or even more. The problems of adequate technical manpower are as tough in this business as they are in any other field requiring specialized men with specialized know-how. The available manpower with the requisite qualifications is limited.

LARGE CAPITAL REQUIREMENTS

Then there is the question of economics and capital investment. Very large amounts of capital are required, not only for the reactor itself, but for such supporting facilities as fuel element fabrication, fuel reprocessing, and collateral activities.

There is also the very troublesome problem of indemnification against possible accident. The probability of accident is extraordinarily remote; however, the potential size of liability in the event of accident is rather great, and it overtaxes the capacity of the insurance available in the world. We have to iron out this indemnity problem.

Then there are other collateral problems—the disposal of waste materials, the question of plant locations, and a good many other matters. Such problems are inseparable from an over-all, well-rounded, world-wide nuclear program like the one we are now pursuing.

There is a need, too, for developing reactors of a type that can utilize natural uranium—that is, uranium as it occurs in nature—rather than uranium which is enriched through an elaborate process in government separation plants.

Just recently, three Florida electric utilities which comprise the Florida Nuclear Power Group have proposed the building of the first large-scale nuclear power generating plant using natural uranium as fuel.

On the global scale, we must keep in mind that nuclear power does not represent automatic salvation for backward countries. It will not automatically propel them forward into the twentieth century.

ULTIMATE SUCCESS ASSURED

There is nothing easy about this program of nuclear power development. It will take a great amount of doing. However, I am confident of its ultimate success. We are some day going to achieve economically competitive nuclear power. We are going to reduce or eliminate, certainly in large power plants, our dependence on fossil fuels of the coal and oil type.

This will be possible because the world's very large resources of fissionable fuel—principally uranium, but also including such elements as thorium—will be available to us for centuries to come, long after our fossil fuel resources have been exhausted.

ARE YOU A "MISSING" SHAREHOLDER?

ARE YOU ONE OF THE NEARLY 3,000 Sunray Mid-Continent Oil Company stockholders whose current mailing address is missing from the Company records? If you are you may share in a fund composed of past dividends that were mailed, and returned for lack of proper address.

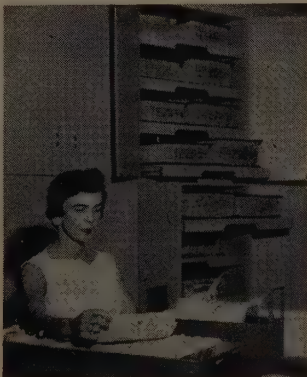


Lewis Lacy checks on the whereabouts of one of Sunray's "lost" shareholders with Murva Renfrow, stockholder relations supervisor. Sunray mails 98,000 dividend checks quarterly.

EVERY THREE MONTHS some 98,000 dividend checks are mailed to holders of Sunray Mid-Continent common stock. Invariably some of the checks are returned by the Post Office with the notation . . . Moved, Left no Forwarding Address, Unknown, etc.

THE SECRETARY of the Company starts his detective work at once in an attempt to locate "missing" stockholders. Despite the fact that no stone is left unturned to deliver dividends to rightful owners a great many stockholders have not yet been found.

MOST OF THE CHECKS ARE SMALL but one missing stockholder has to his credit over \$1,400 in dividends, accumulated during the last 20-odd years.



Beverly Howell cross-checks the "missing" file with outstanding check numbers on list of Sunray shareholders.

SUNRAY'S "MISSING STOCKHOLDER" FILES are worked daily in an attempt to locate wandering stockholders. As the corporate secretary says, "Chances are that the missing stockholder file will never be empty. If it is, the secretary's department will have completed a remarkable task of hide-and-go-seek."

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D-X is the brand name of quality products manufactured by D-X Sunray Oil Company, a wholly-owned subsidiary

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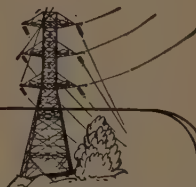
**GENERAL
PORTLAND
CEMENT
COMPANY**

COMMON STOCK DIVIDEND

The Board of Directors of General Portland Cement Company has this day declared a quarterly dividend upon its Common Stock of 45 cents per share, payable June 29, 1957 to stockholders of record at the close of business on June 10, 1957. The stock transfer books will remain open.

HOWARD MILLER,
Treasurer

April 23, 1957



**Southern California
Edison Company**

DIVIDENDS

The Board of Directors has authorized the payment of the following quarterly dividends:

ORIGINAL PREFERRED STOCK
Dividend No. 192
60 cents per share;

CUMULATIVE PREFERRED STOCK,
4.32% SERIES
Dividend No. 41
27 cents per share.

The above dividends are payable June 30, 1957, to stockholders of record June 5. Checks will be mailed from the Company's office in Los Angeles, June 29.

P. C. HALE, Treasurer

May 17, 1957





\$600-A-Year Man

As a shortstop, he has shortcomings. But as an income tax exemption, he rates the top figure.

Trouble is, that top figure is just \$600 a year. If you're a parent, you know how far that goes.

Beneficial knows that any family man may meet times when cash is short. That's why Beneficial is in business . . . to help meet emergency family needs with a small loan service that's sound and straightforward . . . and there when needed.

The Beneficial Finance System helps keep families functioning over the tight spots . . . with always the thought in mind that:

. . . a BENEFICIAL loan is for a beneficial purpose.



Beneficial Finance Co.

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MORE THAN 1000 OFFICES IN THE UNITED STATES, CANADA, HAWAII AND ALASKA

WARNER & SWASEY — CLEVITE CORP.

The group spent the morning with the Warner and Swasey Company—one of the world's largest manufacturers of machine tools, with significant diversification into textile machinery and earth-moving machines (Gradall). The tour included: (1) A trip through the factory where machine tools and textiles machines are built; (2) a visit to the machine tool sales display room, where many of the newest model Warner and Swasey machines are demonstrating latest production methods and tools such as new ceramic cutters, and (3) a stop at the textile laboratory, where weaving and other machines are doing experimental work. A Gradall was on hand for inspection and demonstration.

The analysts were guests of Warner and Swasey for cocktails and lunch at the Wade Park Manor Hotel, where they heard President Walter Bailey discuss the outlook for various divisions.

The afternoon was spent with Clevite Corporation. The tour of Cleveland Graphite Bronze Division's large, modern bearing and bushing plant showed how advanced metallurgy and engineering are translated into precision production of more than a million pieces a day. While the plant tour emphasized Clevite's strong position in the automotive parts business, other divisions—Brush Electronics, Clevite Harris Products, Clevite Transistor Products, Clevite Limited, and Clevite Research Center—were represented. William G. Laffer, Clevite president, and Willard W. Brown, president of the Cleveland Graphite Division, were in charge of the program. Other top executives of the company and managers of its divisions were present for informal discussions during the social period following the tour.

Warner and Swasey Co.

WALTER K. BAILEY

President, The Warner & Swasey Company

DURING THE PAST TWO YEARS, my talks to security analysts, and other investment people, have been very pleasant experiences. However, as I begin to make a second round, I find that it is a little more difficult. This is because I feel that you cannot properly evaluate a machine tool company without knowing something of its history, and something of its industry. But certainly any repetition of this type of background information can become very boring. For this reason, I will rather lightly touch on the machine tool industry, our position in it, and our past history. And for those who want a more complete history, I will refer you to my talk to the New York Security Analysts in 1955. If you do not have a copy of this in your files, we will be glad to give you one.

Inasmuch as 70% to 75% of our business is in the machine tool market, I think the Warner & Swasey Company should be classed as basically a machine tool company, even though some other things have been quite important in the past, and are quite important at the present.

Over the years, the course followed by the company has been typical of machine tool builders as a whole. The leaders in the industry all began their businesses a good many years ago, concentrated on a type, or a few types of machines, and steadily grew out of retained earnings. They made handsome profits in good years, and smaller profits in poor years, but seldom lost any money, except during the period of the Great Depression—and they can hardly be blamed for that. Our industry, and our company, has been built in the past, almost exclusively, out of retained earnings.

The ability of machine tool companies to earn reasonable percentages of net profit has, in many cases, been overlooked. It is, of course, true that the volume of business done by the machine tool industry and by machine tool companies fluctuates rather widely, because, without question, this type of business follows the general industrial business curve in, more or less, the same manner as all capital goods producers. As a result, the dollar profits also fluctuates rather widely; but the ability of machine tool companies to earn a very substantial percentage of net profit at times when their operations are at a reduced rate is a rather outstanding characteristic of our industry.

For example: the business done by our company since 1950 has fluctuated from a low of \$19,000,000 in 1950 to a high of \$57,000,000. But during this period, the lowest percentage of net profit earned, after taxes, was 6.3%, and the highest 9.0%, and the average over the seven-year period was 6.9%. It seems to me that the stability of the industry and its ability to continue to grow out of retained earnings is the result of this ability to continue to make a reasonable profit on the business available. Needless to say, these figures would be higher during war-time periods if the industry was not penalized by excess profit taxes and renegotiation.

In our own company, we came to the conclusion in the late 1930's, that further growth and expansion would need to come from additional products, and the only thought, at that time, was to enter additional markets for machine tools. However, World War II stopped this effort and, also left us with a much larger problem than had been anticipated, and the diversification program—which was really a growth program—was broadened to include other items.

Without boring you with the details of this program, which have been covered before, I would simply state that since 1950, almost exactly one-half of all our production

has been in items that were not manufactured by us before the war; and I think I should further state that this 100% increase in market has come about entirely on items which we have developed for the market. The growth has not been as the result of acquisitions.

Before getting into a statement as to our current operations and profits, I think I should comment on the fact that for the last two years, we have been running somewhat ahead of the machine tool industry, and this results entirely from the fact that we have broadened our market in the machine tool field, and we are now reaping the benefits of our growth program—which was started quite a number of years ago, and still continues. We continue to get the same proportion of the turret lathe business that we got in the past, and we have added to it, the additional business from our automatic machines, some of which have only been introduced during the past two years.

It is probably too early to be positive on the subject, but it looks as if we are accomplishing our purpose, and that we have obtained a larger share of the total machine tool market.

PRESENT OPERATIONS

I would like to review with you our present operations, rate of production, profit, and I would like to give a rough forecast for the balance of the year. In doing so, I want to talk very frankly, and I hope and expect that you will give full consideration to my comments, as well as to the figures.

First, I would like to discuss the Gradall machine and its prospects. I have found, in traveling around the country, that a great many people have expected that because of the road-building program, the Gradall business would boom in the year 1957. We did not expect this for two reasons. The first was that we thought the program would be slow in getting started—and it has been. Second, our machine is not used at the start of construction projects. It is used at the finishing stages. The road program will produce a lot of Gradall business, but not in 1957.

During the first four months of this year, we have shipped 151 Gradall machines for a total of \$4,880,233. Last year, in the same period, we shipped 165 machines for \$4,866,766. We believe that the Gradall business will follow the same seasonal pattern as last year, and that our total sales in numbers of machines will be approximately the same as last year, and the dollar volume slightly greater. I might point out that so far, we have had a better experience this year than other people in the earth-moving field, and I expect this is the result of the fact that we are not dependent upon large construction projects.

TEXTILE MACHINERY

With regard to textile machinery business, our shipments during the first four months of this year were almost exactly the same as the first four months of last year, and we expect to do approximately the same volume as in 1956.

On the other hand, our machine tool shipments are running ahead of the first four months of last year by about 20%, and as far as we can judge, based upon present backlog, present sales, and the expectation of sales, we will continue to run at a higher shipping rate than in 1956, and I

would expect that our dollar volume of machine tool shipments will be 10% to 15% higher than in 1956. I see no reason for changing the statement that I made earlier in the year, that our total income should reach \$62-\$64 million for the year, and that our percentage of net profit would be at least as good as in 1956.

Our total net product income for the first four months was \$22,223,000 compared with \$18,886,000 last year; an increase of 17%, and our net profit, after taxes, was \$2,155,000, compared with \$1,786,000 in 1956, an increase of 20%.

GROWTH OF NEW BUSINESS

The next question which I would expect would be in your minds would be, "How does new business, or orders compare with last year?" During the first four months, we received almost exactly \$20 million of new business as compared with \$22 million of new business in the first four months of 1956. While this shows a 10% drop in new orders placed, I would like to emphasize the fact that the \$20 million this year, in the first four months, is at the same rate as for the average of last year.

Obviously, we have reduced our backlog during the first four months, and we will make every effort possible to further reduce that backlog, because our deliveries are too long. At the present rate of orders and shipments, it will be the fourth quarter before we again have reasonable deliveries on new orders.

As I said earlier, I wanted to talk frankly about our business, our operations, and our profits. I want to strongly urge you to refrain from multiplying the profit figure that I have given you by 3 to obtain the year's profit. In the first place, our third quarter profit will be radically reduced because August is a vacation month, and will produce little, if any, profit in that month. Secondly, the Gradall business is a seasonal business, and it would be very abnormal if the fourth quarter Gradall business was as good as the first quarter business. The big volume of Gradall shipments come in the second and third quarters.

This will be a very profitable, if not the most profitable, year in the operation of this company. It would require a catastrophe to prevent its being a very profitable year. But I sincerely hope that none of you gentlemen will do as a couple of investment services did last year, when they took the earnings shown for five months in our prospectus, and prorated them for the total year, in spite of statements that I had made similar to the one I just made.

MACHINE TOOL BUSINESS INCREASING

You, no doubt, are familiar with the fact that we are in the process of expanding our machine tool capacity. And most of the proceeds of the sale of our stock last summer are being used for that purpose. This expansion is dictated by the fact that we are receiving a larger portion of the machine tool business, and because we have additional machines to introduce in the future.

You also will recall that we stated last year, and again in our annual report, that as we begin to use these increased facilities, we will need additional working capital, and that our plans are to obtain this capital by means of long-term

loans. Negotiations are now under way to provide an additional \$5 million of working capital by means of a long-term loan.

If time permitted, I would like to discuss our leasing program, and its effect on our present and future operating statements. However, this is too complicated a subject to take up today. On a leasing program, starting in 1954, we have shipped about 8% of our machine tool production on lease account. Up to now, and probably for at least some time in the future, we have handled this business ourselves without going through a financing company. This has had a considerable effect on our cash position, but it also builds stability into our future profit picture.

STOCK DISTRIBUTION

It seems to me that you gentlemen may be interested in the general distribution of our stock. Over the last three years, our number of stockholders has increased from about 3,300 to close to 6,000. 8% of our stock, and 15% of our stockholders are on the West Coast; 11% of our stock, and 11% of our stockholders are in New England; 11% of our stock and 20% of our stockholders are in the New York-Philadelphia area; and 28% of our stock, and 33% of our stockholders are in the Middle West. In this Middle West group is included Ohio, with 22% of the stock, and about 20% of the stockholders. Only 6% of our stock is in brokers names, but 25% is in the name of nominees, with a large proportion of this nominee stock being located in the Cleveland area.

DIVIDENDS

Another subject which is always dear to the hearts of analysts and investors is the subject of dividends. I do not think that you expect me to commit our company on dividends for this year, and I have no intention of making any commitment. Our present quarterly dividend rate is 40c per share, as compared with 30c last year, and 25c prior to that. In addition to this quarterly dividend, it is reasonable to assume that there will also be an extra dividend at the end of the year.

If you will examine our record of dividends and earnings, you will find that there has been a rather steady progression in the amount of dividends since 1950. You will also find that on the average, we have paid out 39%, and that the highest percentage was 45.8%, and the lowest percentage

was 31.4%. Such an analysis of our earnings and dividends for the last six or seven years indicates our general policy on dividends, and indicates that it is a conservative policy. As far as I know, there is no intention of changing from this conservative policy as long as we need operating capital in the business; although, of course, we hope that continued increased earnings will result in continued increased dividends.

Our company has made great progress in the last five or six years, due, in large part, to the broadening of its lines. Its volume of business has, of course, been affected by general business conditions, and expansion of industry; but its growth has come as a result of new products. Therefore, I think I should give you a little picture about the future. We have introduced for this year's production, two new machine tools. One is now being produced, and all that we will produce this year have been sold. The second machine, upon which we will not get any shipments until the fourth quarter, has been very well accepted, and we have over \$1 million of orders for that machine. Within the next sixty days, we will announce another new machine in the turret lathe field, and we will be selling this machine during the balance of the year, but the first shipments will come in 1958. In the early fall, we will announce a new design of one of our most popular models, and this machine will be in production in 1958. We are also working on two additional machines which will be ready for announcement during 1958, and will affect our production and shipments in 1959.

WARNER & SWASEY'S GROWTH FACTOR

With regard to our business and growth in future years, it seems to me there are a number of factors definitely in favor of this company. If you believe that the present increase in population, and a continuing trend toward further increases in population will result in increased productive capacity in this country, we should benefit. If for these reasons and other reasons, you believe that we have an expanding economy, then there will be continuing expansion of plant and equipment, and we should benefit. Probably the greatest favorable force that will affect us in the future is the fact that industry must do everything possible to reduce costs, because of the continual increases in labor rates. These factors should give us a healthy climate in which to operate, and in which to expand our business.

**The American Metal
Company, Limited**

COMMON STOCK
Dividend No. 126

The Board of Directors has declared a dividend of Thirty cents (30¢) per share on the Common Stock payable June 1, 1957 to stockholders of record at the close of business on May 21, 1957.

H. VOGELSTEIN,
Vice President and Treasurer.

**Johns-Manville
Corporation**
DIVIDEND



The Board of Directors declared a quarterly dividend of 50c per share on the Common Stock payable June 7, 1957, to holders of record May 27, 1957.

ROGER HACKNEY, *Treasurer*

**PUGET SOUND POWER
& LIGHT COMPANY**
*Common Stock Dividend
No. 55*

The Board of Directors has declared a dividend of 34c per share on Common Stock of Puget Sound Power & Light Company, payable May 15, 1957, to stockholders of record at the close of business April 24, 1957.

FRANK McLAUGHLIN
President

It's a "sure thing"... Better Power-Trains mean Better Machines



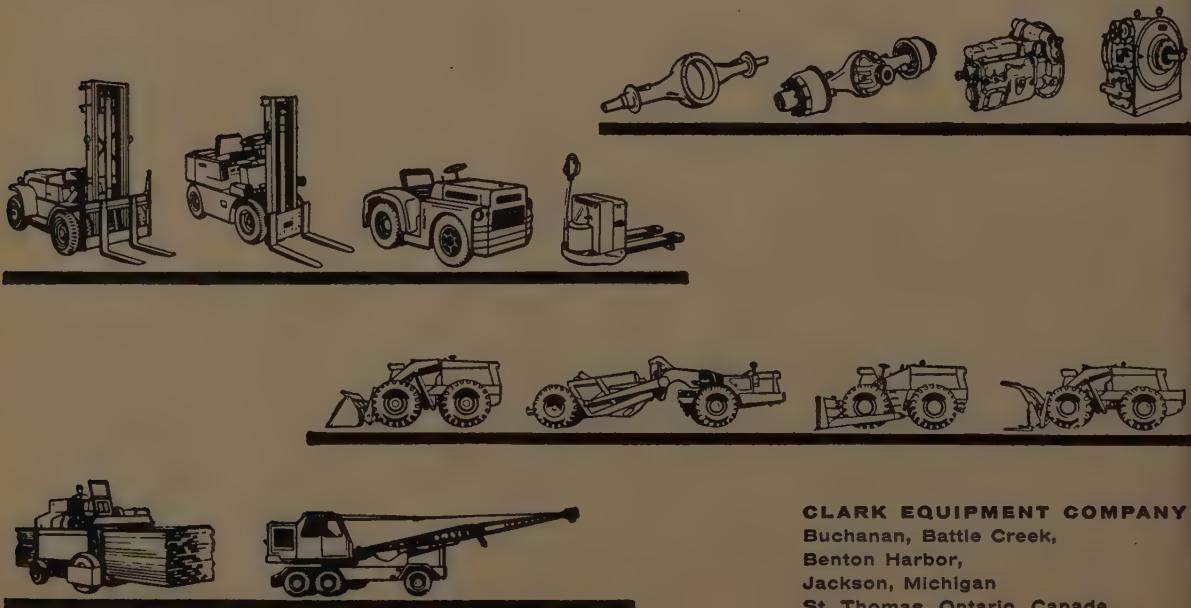
For 40-odd years Clark Equipment has focused engineering attention on a vital area of automotive equipment performance: the transmission of engine torque from flywheel to drive wheels.

Starting with axles, transmissions and finally torque converters—those working “vitals” that transform engine power into driving power—it was natural, even inevitable, that Clark would develop end-product machines, using its own-designed, own-

built components.

That those Clark machines would win swift success is not surprising, for leadership was bred into them—leadership in the vast area of materials handling, leadership more recently in the huge construction industry.

There's an irresistible logic about that Clark development, pointing up a sound moral: Better Power Trains mean Better Machines. Clark builds both!



CLARK EQUIPMENT COMPANY
Buchanan, Battle Creek,
Benton Harbor,
Jackson, Michigan
St. Thomas, Ontario, Canada

TRANSPORTATION FORUM

The Place of Air Transportation in Distribution

ROBERT J. SMITH
President, Slick Airways

THERE IS A SINGULAR WORD in this expressive English language of ours that has a particular fascination for anyone engaged in your profession of financial analysis. The word—an adjective in some cases, a noun in others—describes something that does not really exist, yet is possible, and is in the making for the future. The word takes into consideration latent powers. Not only does it describe conditions that may develop in the future; it even attempts to measure the intensity of those conditions as they develop.

In physics, the word expresses the energy which a piece of matter has because of its position, such as a weight raised to a height, a coiled spring, or the like.

By now, of course, you know that I am referring to "potential."

In financial circles, potential is simply the measure of the ability of a business to serve a useful purpose. It is a measure of a product plus the ingenuity of management to put that product to use.

For example, the potential of Old Bossy, the cow, is not limited to the fact she gives only milk. Her potential arises from our ability to produce butter, cheese, ice cream, industrial glue, pies and cakes and hundreds of other useful things from her basic product.

Similarly, we should not confuse the potential of the airfreight industry with the notion that it is solely a collection of instruments for shipping small packages in a hurry on an emergency basis.

To evaluate the potential of airfreight accurately, we must examine four factors that are creating a new business atmosphere around us and consider their impact upon this eleven-year old "adolescent industry."

(Airfreight has progressed far from the birthing and infant stage—has not yet attained its full maturity—but has flexed its muscles to feel the confidence arising from its own strength. Certainly, it emulates the adolescent in its enthusiasm and will to win.)

Four factors we should consider are these:

1. The expansion of the economy of the United States and the steady increase in overall business activity will reflect itself in the airfreight industry. Historically, total freight transported in the United States has been closely related to the level of national output. While no really meaningful relationship can be drawn between any of the

general economic indicators and air cargo traffic, it can be expected that as a new industry, air cargo will expand at a rate considerably more rapid than the economy as a whole. In 1956, the all cargo airlines carried 13.3 per cent more freight traffic than during the previous 12 months.

2. As the personal income of consumers continues to rise, the flow of merchandise must keep pace with the needs and wants on one hand and with production on the other. Personal income rose to \$325 billion in 1956 according to the McGraw-Hill department of economics. This is an increase of \$19 billion over 1955. Because consumers are so important in determining the character of our transportation system, this personal income factor amplifies the growth of air freight in relation to the economy in general.

3. As more industries discover the benefits they can derive from air transportation, the percentage of air freight shipments to total shipment will increase. Even after 10 years' operation, airfreight today represents less than 1/20th of 1 per cent of the total intercity cargo moved by all forms of transportation.

4. As a new instrument of commerce, air freight provides a means of opening new markets and developing new business. The Air Transport Association of America has recently concluded a study on "How the Businessman Can Use Air Freight in an Expanding Economy." Considered in this study, for example, is the case of the California flower growers. When the Eastern markets for cut flowers were brought within their reach "overnight by air," revenues to the California growers mushroomed from \$2 million to \$20 million annually in the short span of five years.

Based on these four premises, let us translate the generalities into actual figures. Five years ago, domestic civil air cargo totaled 200 million ton miles for the year. Last year, it rose to slightly under 400 million ton miles. We think it likely that this trend will continue and that the air cargo volume will double once again within the next five years.

The Civil Aeronautics Administration, a conservative agency of the government, is predicting that air cargo volume will reach one billion ton miles annually by 1965. This represents a 150 percent increase.

Two recent reports on "Business' Plans for Capital Spending" by McGraw-Hill add further credence to these forecasts.

In January, McGraw-Hill reported: "Business capital

expenditures are heading for stability at a high level. Most companies plan to increase spending in 1957 and to maintain this high level in 1958. Although this is the biggest and longest capital spending boom on record, no downturn is yet in sight."

Last month, McGraw-Hill took another look at business to bring its statistics up to date. Their report on April 27 stated: "Many a business forecaster has been shaken this spring by the tremors caused by tight money and lowering profit margins. But the engineers pushing the country's capital program have not felt the need to jam on the brakes. And there is no prospect they will. By 1960, manufacturing companies will have a capacity 75 per cent greater than in 1950."

Let us consider the affect of these projections on air-freight growth. The cost of distribution is the major business expense in our modern world. According to a Twentieth Century Fund Study, fifty-nine cents out of every dollar goes toward the distribution of goods, as contrasted to the forty-one cents it costs to produce them.

This relationship—59c for distribution, 41c for production—takes on a special significance today. Costs are rising rapidly—too rapidly—in all forms of business. Profit margins are being reduced—sometimes to the vanishing point. In a search for the means to restore a sounder relationship, the cost of distribution, the preponderant cost, offers naturally the greatest opportunity. In fact, it is my belief, supported by some independent, expert opinion, that there are more potentials for increased earnings hidden in distribution costs than industry and commerce presently enjoy.

Certainly this is the area of greatest promise for reward, and yet it is the area of which least is known. The distribution cost, of course, reaches far beyond the price tag of transportation alone. However, it is just good business sense that if we can cut down on any one of these distribution expenses, the reduction will have a direct effect on both the price of goods, and on the profit of the business.

Of the 11 items that principally comprise distribution cost, we think that eight of them can be directly reduced by the use of air transport. Those items are:

1. Warehousing
2. Insurance
3. Handling
4. Packaging
5. Crating or packing
6. Taxes
7. Elements of capital investment
8. Inventories.

Even as to the costs of the other three elements, marketing, sales and advertising, we think that substantial advantages and benefits will accrue.

Air transport, as one of the newer forms of transportation, has certain characteristics which have been found historically in many modes of transportation when they were newly developed. First of all, it is faster than previous methods. And it bears a higher tariff.

Both the speed and cost characteristics need further clarification, and it becomes necessary to take a look at the "transportation package" which a business really buys when

it is moving things from one place to another. This fact is now widely accepted and seldom questioned, as to personal transportation. Its acceptance as to the transportation of things has an ever growing acceptance, but not yet the general acceptance which will surely come. Those who have tested it know why this is true.

To illustrate, General Edwin R. Rawlings, Commander of the Air Material Command, U. S. Air Force, who has the responsibility of spending the biggest single item—\$16 billion—of the world's biggest budget, is using airlift to speed the Air Force's supplies.

He has found that the dollars spent on communications and transportation come cheap. He is spending more money on both—but he is saving much more than he spends through reductions of inventory and manpower.

One example of how he has won big savings is the airlifting of jet engines to bases around the world. Until October, 1954, these engines were shipped by sea or over land to all Air Force bases.

Slow transportation meant that many more engines—each costing around \$200,000—had to be kept in inventory and fed into the supply lines.

SAVINGS AFFECT THE TAX PAYER

Now, by airlifting the engines, General Rawlings has cut inventory in half. One high Air Force officer reckons the saving that comes from this runs to about \$1 billion. A civilian official of the Air Force figures the saving is even greater than that. These savings affect you, a tax payer.

There is a remarkable lack of reliable data on inventory carrying costs and a seeming lack of interest among business men in knowing what they are.

The whole area of inventory control, as affected by transportation implications and possibilities, is largely an unexplored one. It justifies far more attention than it has thus far received.

It may be said that a "sound inventory policy" is one which provides for an unimpaired and uninterrupted operation of the enterprise, with reasonable assurance against shortages, and safeguards against losses resulting from price fluctuations.

If this is a fair statement of policy, then let us examine levels of inventory. We know that the dangers of excessive inventories are:

1. Idle capital—capital tied up for too long—"hibernating" capital.
2. Excessive costs of handling, storage, spoilage, obsolescence, taxes and insurance. The larger the inventory, the more handling, the more damage, spoilage and obsolescence.
3. Possibility of price declines. Prices are dynamic—not static.
4. An example to employees of wasteful management.

Conversely, we know that the dangers of inadequate inventories are:

1. Unsatisfactory service to customers—you cannot do business from an empty shelf.
2. Possible disadvantages in purchase price and transportation costs of too small quantities.

3. Excessive cost of internal purchase and office routine, follow-ups and customer adjustment methods.

4. Excessive production costs of "short runs," due to lack of materials.

5. Labor problems resulting from irregular production which could be leveled out by means of larger inventories.

Harvard Business School has recently released a new study called "The Role of Air Freight in Physical Distribution."

Some conclusions from the Harvard study were:

1. There is an increasing interest in and awareness of the possibilities inherent in the use of air transportation.

2. There is great need for a re-thinking of the place of transportation in business operations.

3. The field of physical distribution has, generally speaking, been neglected by business management, but offers many rewards for those who will re-examine it.

4. Top executives of many industrial companies still look upon the traffic function as a narrow, routine one, rather than in the broader light of its potential contribution to procurement and to distribution, and to more efficient and economical conduct of the business.

5. The exploration of the potentialities of using air transportation in a business frequently serves as a "trigger" to set off re-examination of a business area which holds many possibilities for improvement.

BENEFITS OF AIR FREIGHT

Here are two brief case histories reported in Sales Management magazine of how these specific benefits of air freight work:

Armour Laboratories, Bradley, Illinois is a manufacturer of pharmaceuticals. It found that serving the Southwest territory from a warehouse in Ft. Worth was slow and expensive.

An analysis of costs during a test period showed that distribution costs could be reduced by more than 50% through the use of air freight. The Ft. Worth warehouse was discontinued and the company adopted the practice of shipping by air freight from Chicago to Dallas—with parcel post, Railway Express and truck transportation from Dallas to points in Arkansas, Louisiana, New Mexico, Oklahoma and Texas.

As a result, Armour lowered costs through elimination of a warehouse and centralization of inventories. It provided better, faster service to customers. Flight from Chicago to Dallas takes little more than three hours, and first or second morning delivery on orders is now the rule.

Here is how the plan works: Orders are forwarded directly to Armour's Bradley plant for processing, packing, labeling. The post office permits use of a Dallas parcel post meter, and proper postage is applied to packages for mailing beyond Dallas. For shipments beyond Dallas, by Railway Express or truck, express receipts and transfer bills of lading are made out in the plant. All shipments are consolidated and consigned to a Dallas delivery service. In Dallas the pre-stamped parcel post packages go to the post office, and the others to Railway Express or truck lines.

Another air freight user is the Ero Manufacturing Company of Chicago, manufacturer of automobile seat covers.

Though only 10% of the company's production was in custom (made to order) jobs, this called for special patterns, cutting equipment and staff with special skills. This custom line operation also occupied disproportionate areas of floor space, double the amount justified by sales in Ero's Chicago, Philadelphia and Los Angeles plants. The Philadelphia plant served the territory as far west as Pittsburgh; the Los Angeles plant serviced buyers west of Denver; the Chicago plant's output fanned out to the intermediate regions.

To solve its problem, Ero discontinued its made-to-order operations in Philadelphia and Los Angeles and concentrated them in the Chicago plant. Custom covers are now shipped in quantities by air to post offices in the same cities where they were previously produced. The company pays air freight costs and customers pay shipping costs from local post offices, as they previously did. Several cities have been added as "drop-off" points, giving customers quicker and more economical delivery.

Results: Reduction of inventory; end of duplication of costly patterns; reduction of "indirect labor"—foremen, superintendents and inspectors (who were relocated chiefly to production of standard seat covers).

Says Howard Leopole, Ero's president: "The present system is ideal. It has reduced costs, sped up deliveries and enabled us to centralize production."

The list of products regularly moving by air is steadily growing. It includes auto parts and accessories, aircraft engines, components and accessories, electrical and electronic equipment, apparel and fabrics, machines and machine parts of all description, plastic products, drugs, cut flowers, toys and countless other things. Racehorses, gorillas, monkeys—all types of live animals, in fact—steamship crankshafts, household goods and human remains also travel by air.

Aside from serving commercial users, air freight service has a great potential for improving the nation's mail service.

LETTERS BY AIR

Last year, through a special arrangement with the Post Office Department, the airlines on a space available basis carried more than four million first-class letters daily between certain cities along their domestic routes. And this "Three-Cent Air Mail Experiment," as it is called, in 1956, saved billions of hours in delivery time for millions of letter writers. Millions of letters reached their destination an average of 12 hours sooner than had they traveled by surface means.

Started in 1953, the three-cent mail by air has proven highly successful. The total carriage of three-cent mail on a ton-mile basis was 15,013,000 ton-miles for fiscal 1956, or 19.8 per cent of total ton-miles of domestic air mail flown by air. By the end of June, 1956, after 33 months of the experiment, the airlines had received a total of \$6,745,000 for carrying the three-cent letters between the points affected, less than .2 cents per letter carried. During the same period the service had generated a total of over \$1,000,000,000 in revenue for the Post Office.

The experiment is a success, although airlines are not certain they are being compensated enough for the service rendered.

This does indicate, however, the possibility of developing an all-up mail program with the Post Office providing a premium service to the public at a standard price.

Up to now, we have considered only the potential of air freight—None of its problems. What are some of the challenges to reaching these potentials.

RATES

First is the matter of air freight rates, which are controlled by the Civil Aeronautics Board through the establishment of minimum rates.

The CAB needs to establish a new structure of rates at a level which will bring airfreight yields, at reasonable load factors, in line with costs now incurred by the carriers rendering airfreight service.

The current structure and level of airfreight rates is the result of a combination of circumstances and developments rather than of a conscious plan. Active rate competition between some points, but not between others, has distorted the rate structure. Various amendments of the original Minimum Rate Order of 1948 both as to level and as to structure have caused anomalies. Certain airfreight tariff rules are not only awkward to use but have not been revised to meet the capabilities of newer types of equipment.

Low specific commodity rates have been applied to some commodities on the unsubstantiated belief that such commodities would not be air borne unless granted rate concessions, while between other points shippers of these same commodities are not given the reduced rates.

In short, now with the experience of eleven years, a thorough investigation of airfreight rates appears to be in order to establish a structure and rate level necessary for the industry's development in the next decade which is economically sound and non-discriminatory for the shipping public and which adequately meets the air carriers' costs.

Carriers of airfreight today are not transporting freight in scheduled common carrier operation at a profit. At the present time, despite the increased use of efficient modern equipment and a steady airfreight increase, airfreight revenues are running substantially behind total airfreight costs for all carriers.

All the indications are that many rates can be increased without interfering with volume.

A petition is now on file with the CAB for an investigation of airfreight rates.

The second problem is one encountered by most new industries: educating the public to the proper use and advantages of new service. Even as modern as we consider our world today, we are still faced with resistance to change and reluctance to accept new innovations.

FINANCING

Another problem has been the procurement of adequate flight equipment. This involved (1) long term financing and (2) placing orders and depositing money years in advance of delivery dates and prior to the utilization of equipment.

New modern all cargo aircraft—like the Douglas DC-6A—is greatly reducing the direct operating costs of air cargo carriers. The DC-6A reduces direct flight costs 30% over the DC-4 and C-46 aircraft it is replacing.

But since the all cargo carriers have been operating under 5 year temporary certificates from the CAB, it has been difficult to arrange long term financing. This problem has a possible solution in the form of legislation to grant permanent certificates to the four leading all cargo carriers. The bill was passed unanimously by the Senate recently and is now being considered by the House. Permanent certificates could also have the favorable effect of making the all-cargo carrier's stock more attractive as long-term investments.

Besides the problems of getting the freight into the air, the cargo airlines have another important problem confronting them: ground operations. The true measure of time elapsed in transport is from the dock of the shipper to the door of the consignee.

Aircraft may fly 300 miles an hour, but if time is lost on the ground, the shipment may average only 80 miles an hour. We have to continue the perfection of pick-up and delivery service, ground handling and every element that can speed a shipment.

In closing, it might be helpful to give you a few specific examples of how an airline can relate its planning to the considerations we have just discussed. With your indulgence, please allow me to tread on the familiar ground of Slick Airways' for illustration.

Our company has carefully developed a detailed analysis of its own business. This study served as an inventory of what we have accomplished in our first ten years. Then it projected our growth for the next five years in relations to that of the national economy. It took into account our desires as to where we would like to be five years from now. It used these potentials to indicate the requirements we are obliged to meet if we are to attain our objective and, finally, it provided us with a step-by-step plan for achieving the goal.

We asked ourselves quite frankly "Does the record of Slick warrant the judgment that it can fulfill an important role in supplying the nation's need for air transport service?"

We found that 77 per cent of the total domestic cargo enplaned in 1956 originated in the 38 cities Slick is certificated to serve. Seventeen of these cities are in the top 25 air cargo producing communities in the United States.

Our company is waging an aggressive customer education and sales campaign designed to reach top management as well as the traffic manager in leading industries.

Our airline is cooperating fully with the Post Office in its experiment for carrying 3-cent mail by air.

In the matter of air freight rates, Slick has taken the lead in the industry for a comprehensive approach rather than an emergency stop-gap measure. Our position has been to ask the CAB not to compound further the presently complicated rate structure, but to re-examine the entire rate-making procedure and evolve a new simple solution meeting today's requirements.

In the matter of long term financing, most of you already

know that adequate financing for Slick has been arranged for the next 5 years. The Chesapeake & Ohio Railway was instrumental in underwriting our equipment and expansion needs in the foreseeable future. Slick has on order five additional DC-6A aircraft for delivery next year. These new planes, improvements to our present fleet, and the necessary spare parts to keep them flying will cost \$17,300,000.

Anticipating the problems of explosive growth, Slick engaged the New York firm of Drake, Startzman, Sheahan and Barclay, distribution and materials handling consultants, to survey its ground handling procedures and equipment, and recommend immediate improvements as well as plans for future facilities, methods, and equipment. Its objective is to maintain high standards of service yet keep a ceiling on costs.

The consultants made their report in February, proposing a new plan for the utilization of the labor force in loading and unloading cargo and recommending a design for "the station of the future."

The solid foundation for the success of the air cargo industry exists in the dynamics of the economy of the United States and other nations, and in the real and basic requirement for modern air transportation. Reinforced with adequate long-term financing, cognizant of the problems to be overcome, and staffed with personnel possessed of valuable experience, this young industry is seriously conscious of its obligations, determined and dedicated to the accomplishment of success in the future.

SLICK WILL GROW

Slick has an organization which is skilled and experienced. It is keenly aware of the public service responsibility reposed upon it. Its plans for the future contemplate further improvements to its services through the addition of more efficient aircraft, continued critical examination of ground handling techniques, and greater coordination of its services with ground transportation services. This it conceives to be in the public interest. We believe the opportunities for growth are great; and we believe that Slick will measure up to those opportunities—growing itself.

The Economic Place of the Railroads in Future Transportation

J. G. LYNE

Editor, Railway Age

WHEN PEOPLE SEE A RUSTY RAILROAD branch line being abandoned, or a local passenger train discontinued, too many of them say: "Isn't it too bad about the poor old railroads. How they're drying up?" Actually, getting rid of these costly retail transportation operations is no sign of railroad weakness, but evidence of growing railroad strength. When the railroads can haul freight in trains of upwards of 100 cars and passengers in quantities up to 1,000 per train, you are witnessing the most economical general service transportation that modern technology can offer.

In an era of mass production, the railroads are predominantly the mass production agency in the field of transportation. Wherever you find weakness in railroad performance, it is only in those areas where they are still being required to do a retail transportation job, a task for which they are not suited, and a job they would not have taken on, if the gasoline motor had been invented before the steam locomotive.

The railroads were never in a stronger position than they are today, as far as economics and technology are concerned. What they are suffering from is called by sociologists, "cultural lags." They live under a framework of tradition at least a generation out-of-date, and a tradition which has been frozen by statute into regulation.

Legislation and regulation are always aimed at past abuses, never at current or future ones. Take so simple a statute as that which applied an excise tax on transportation during the war, in part to discourage passenger travel on the railroads. The reason for the legislation has long since vanished but because of "cultural lag" we still have the law, and we still have the tax.

RETAIL OPERATIONS UNSUITED TO RAILROADS

If it were only technology and economics that had to be considered, it would be possible to predict for the railroads a period of unprecedented prosperity. This because the industry is rapidly reducing its retail operations—its branch line and local passenger and freight trains. Railroads never were adapted technologically or economically to handling passengers or freight by handfuls.

The greater the degree to which the railroads rid themselves of the incubus of these retail operations, which can be done so much more economically by highway vehicles, the less the burden of red-ink services that will have to be borne by the mass-production operations at which the railroads excel.

The unresolved question as to the future of the railroads is not economic or technological, it is institutional. The railroads have regulatory and statutory obligations to pro-

vide a lot of red-ink services, an obligation which was just when the railroads had a monopoly, and the question is: Now that the justification for these burdens has vanished, will the obligation itself be removed? Since I am an optimist, I believe the obligation will be removed—not overnight, but pretty fast at that.

All this hullabaloo about the "passenger deficit" is but recognition that the railroads have got to be allowed to withdraw from that part of the passenger business that cannot be made to pay. Getting rid of these money losers will proportionately strengthen the railroads in going out competitively after the traffic they can handle more economically than other agencies of transportation.

But the railroads still have a long way to go in revising their system of pricing for their freight business so as to accurately reflect the railroads technological and economic superiority, in bidding for most of this traffic.

As we are all aware there are two distinct ways of pricing the services of an economic enterprise, such as transportation. You can let the prices be determined, pretty much, by competition or you can have so-called administered prices. Rate-making, as practiced by the railroads, under commission regulation, was very largely of the administered-price variety up through the 1920's. There have been numerous changes since but that basic pattern still remains.

With administered prices, you do not follow the free market—supply and demand. You charge one fellow a dollar for something not because it costs a dollar, but because, in your wisdom, you think that is what he "ought" to pay. Another fellow you may charge only a quarter, for a product that costs just as much to produce as the product you are selling for \$1. You discriminate in your pricing because you and the regulators believe you know better what is good for you and your customers and for the country than the free market can tell you.

There are a lot of people, probably some shippers as well as transportation people, who are mighty homesick for the good old days of the 1920's. I was going to say that the regulators are also homesick for the good old days of administered prices but that would be a mistake, because most of the regulators seem to think the good old days are still here. They are hanging onto the system of detailed regulation of some transportation charges, i.e., the charges of the regulated common carriers, just as if they could make these administered prices stick. But with 90 per cent of water traffic and two-thirds of truck traffic not regulated, the only possible effect of continued rigid regulation of common carriers' rates must be to prevent common carriers from competing as effectively as they could with the large and growing unregulated sector of the transportation industry.

I know that most of the interstate commerce commissioners are opposed to any easing up in regulation. Over at Ann Arbor a couple of months ago I heard Commissioner Arpaia of the ICC make a very eloquent speech in favor of retention of all existing regulatory controls on the common carriers. He defended regulation because he said it was necessary to preserve order and to prevent chaos in the transportation business.

Of course, you can try to administer prices under these conditions and that is what the ICC is doing. And the carriers not subject to ICC discipline, are saying that ICC authority over the regulated carriers must be continued. It is perfectly natural for competitors who are free to compete to want regulatory hindrances perpetuated on the competitive effectiveness of their rivals. To have the ICC hold railroad rates at a high level just so their rivals can take away their traffic appeals to these rivals as a very splendid arrangement. But the arrangement certainly is not one in the interest of economical transportation. Hence I do not believe it is a condition that will be permitted to exist indefinitely.

Competition is a powerful force. As regulated carriers see more and more of their traffic taken away, not because of any economic weakness on their part, but because of regulatory discrimination against them I would expect them to complain more and more loudly at the injustice. Moreover, if a carrier wants to charge a patron only \$1 for a service and that carrier's rivals and the regulators insist that the charge must be \$2, then eventually the carrier's patrons are going to have a good deal to say about the final answer.

Under conditions of a virtual railroad monopoly of transportation, the railroads were forced to practice a great deal of what has been called "internal subsidization." This means that, in return for being allowed to collect a very high rate on traffic that could "bear" such rates, they were required to handle a lot of traffic at less than cost. This practice of subsidizing losing services is coming to an end because there is nobody left who will put up the money to continue such internal subsidies.

You try to charge a shipper a high rate today, in order to enable you to haul somebody's traffic at less than cost, and the high-rated shipper takes his traffic away from you. You try to make the railroad owner and creditor pay the subsidy, and you shut off your inflow of new capital.

THE POWER OF COMPETITION

Competition is more powerful than regulation, and, if you are going to have it in the transportation picture, then you are eventually going to have it everywhere. It is theoretically possible to exclude competition, but to do so you must outlaw private transportation, and terminate all exemptions in the regulation of for-hire carriers. It is politically impossible to end all exemption from regulation and it is politically impossible to prohibit private transportation. Therefore, competition has come into transportation to stay and, seeing what a pervasive force competition is, it is competition rather than regulation that is bound, in the long run, to be the dominant force in transportation pricing.

If the regulators try to stop it, all they can do is to hinder the regulated part of transportation from competing effectively. And, if that is what they do, then that part of transportation subject to regulation will become smaller and smaller. And the regulators will find themselves with less and less to regulate. I cannot imagine that regulators will long persist in treating regulated carriers so badly as to put them out of business because, without a lot of carriers subject to regulation, what work will there be to justify the continuance of the regulators' jobs? In short, I believe,

whether the law is changed or not, that regulators will be forced to recognize the forces of competition in their regulation of the common carriers.

R. R. PROPERTY IN PUBLIC OWNERSHIP

Here in the United States we like to believe that we are the citadel of free enterprise and a free market economy. That, is a delusion. In transportation we are, of all large nations, the most socialistic. That is to say, we have far more transportation property in public ownership than any other large nation—property, that is, in fixed transport plant (waterways, superhighways, airports). And there is usually no very direct connection between who pays the cost and who gets the benefit from the use of this plant.

But even socialism does not automatically stop competition. In Britain the railways are owned by the government and, this coming July 1, the British railways are going to become wholly competitive. That is to say the only rate regulation they will have will be a quite high schedule of maximum rates. Under this very high ceiling they will be able to quote any rates they please, and they will not even have to make such rates public. They can charge one shipper one rate and his next door neighbor a different rate, for quite similar service.

In Britain they have given up trying to divide traffic between rail and other forms of transportation by regulation. They are going to let the division take place by virtually untrammelled competition. Closer home, in Canada, through the system of so-called "agreed charges" the railways have a great deal more freedom in competition than the United States railways have. Nowhere in the world, except here in the United States is there a major country which is still trying to deal with its transportation industry under the old-fashioned system of minute regulation.

Where competition exists you do not need regulation to prevent carriers from over-charging. And, when it is impossible for carriers to overcharge, it automatically becomes impracticable for them to undercharge, because they have no resources from which to recoup themselves for their undercharges.

I do not believe that, in the long run, the working of economic forces can be thwarted unless you have an iron-clad monopoly. Since there is no longer any iron-clad monopoly in transportation, the economic force of competition is going to keep on operating and, when you have such a force in operation, it is usually more profitable to work in harmony with it than to seek to oppose it.

THE RAILROADS MUST WITHDRAW FROM PROFITLESS SERVICES

One of the most discerning discourses ever made on the present transportation situation in the United States was presented by Professor Kent Healy of Yale at the annual meeting of the American Economic Association last winter. He pointed out the necessity for the railroads to withdraw from profitless services. He also singled out the fact that, in the East, for a 500-mile haul, it cost a railroad only 17 per cent more to move a box car with a 30-ton load than one loaded with only 10 tons.

He also drew attention to the high terminal-cost factor

in railroad expense. In the East, for example, the progression of costs as distance increases, up to 500 miles or so, is quite moderate.

The railroads have used their cost characteristics to only a very limited degree in competing for traffic. They will undoubtedly greatly improve their earnings position if they will make greater use of these cost factors (1) to price themselves out of unprofitable services and (2) to price themselves into transportation jobs where they are now not participating to any considerable degree.

Cost differences, based on whether shipments are single-car or multiple-car—and on whether shipments are dependable or sporadic—can with economic justice be reflected by differences in rates. If the railroads and other common carriers move toward rates of this kind, they should certainly be able to strengthen their competitive position, as compared to that of unregulated and private carriers. And the public would benefit from progressively lower costs of transportation.

There should be a great development of piggy-backing and kindred kinds of rail-and-truck cooperative transportation to the benefit of both agencies, as well as the shipper.

There was a day when the electric utilities tried to charge customers on the value-of-service principle. They put in separate meters for heating devices, for instance, charging you less for a kwh. of electricity when used to iron clothes than if used to provide light. But they outgrew this method of charging. They no longer ask you what you are going to do with the kwh. you buy. If you will buy enough kwh. and buy them dependably, you will make them economical to produce and the electric company shares this economy with its customers. The result is that people buy more and more electric current all the time and the customers and the electric companies are quite happy.

I believe the economics of railroading has a great deal of the same structure as that of the utilities. The two structures are not exactly alike, but they are similar and some of the charging practices that have worked for the utilities would undoubtedly work with some of the same advantages to the railroads.

It is a misfortune to the country, as well as to the transportation industry, that the various instrumentalities of transportation are looked upon as rivals of each other. The reason for this rivalry, is the irrational hindrance placed in the way of operation by one company of several different forms of transportation. A railroad and a motor truck are only tools. To treat them as competitors is something like considering the hammer to be a competitor of the saw. Both tools are useful and neither of them does exactly the same job as the other. For some tasks a saw is the better tool and for other jobs the hammer. Our public policy ought not to attach any incumbrances to the use of either tool—let the mechanic take his choice, and it will usually be the right one.

In sum, I do not believe that technological and economic factors ever favored the railroads as much as they do today. The only real handicap there is to railroad growth and prosperity comes from institutional inertia—"cultural lag." Cultural lag retards progress, but cannot, in the long run, prevent its attainment.

Will the Financial Community Miss the Bus?

ARTHUR S. GENET
President, Greyhound Corp.

I THINK OUR BIG PROBLEM in the bus business is the fact we have not told people what we can do.

Basically, it started out to provide local bus service in places where there was no transportation, between the little towns. Up in the Iron Range is where Greyhound started and worked down through the country and today, of course, the bus industry covers the entire country. What is not generally known is that some 44,000 communities in this country have no other service than by bus.

Now, just having the service is not good enough, but it has to be the best service and, that is what it is today.

In 1955, there were 19,775 flight cancellations in Chicago and New York. There were no flight cancellations over the highway.

KIND OF EQUIPMENT

Now what kind of equipment are you riding? I do not know how many of you have ever been on a bus. I mean an intercity bus. It is equipped with air conditioning and heat, wonderful seats, rides better than the best automobile, has air springs which are on the most expensive Cadillacs for the first time. We have had them for five years. The railroads tried to use them and there was a terrible gripe, but you cannot find a better ride nor can you find a better way to go in many of the places.

When it comes to high speed, long distances, we are not competing, but if you want to see the country you cannot see it from the air. We are not competitive with the airlines, nor are we competitive with the railroads. I am not talking against my competitors. I am merely illustrating what can be done with a bus.

Mr. Smith referred to the package express. When he talked about the distribution features he said they were using Railway Express and truck on the other end of the haul. Greyhound and a number of the other bus carriers have a contract that is working out very well with 16 of the major airlines for just that job. We think we belong there. We do a great package express business. We have not told anybody about it, but we are going to.

Further than that on the question of charters, how to use a bus, this group that came out from New York the other day could have chartered a bus, been here promptly at about one-third of the cost of either the rail or air.

I believe soundly in the philosophy that these gentlemen have expounded, that there is a place in transportation for all forms of transportation. That is the basic reason why I accepted this job of Greyhound. I left probably what was the finest job, that of the vice president of traffic of C&O Railroad because this business is basic. You must have mass transportation in this country. You must provide it in some way, shape or form. The way people should move en masse is over the highway and on an intercity bus. That is the future of this industry, and I cannot tell you what the

industry as a whole is doing but I can tell you the Greyhound picture, and I believe it is illustrative because I have always felt in transportation that no one company can succeed; it must be the success of an industry.

Since May of last year, our passenger miles have been up every month with two exceptions, October of last year and March of this year. The reason for March was that Easter fell in April rather than March, as it did a year ago, and our passenger miles in April were up 3.7 per cent, so I think the industry has turned the corner. We are on our way to get to the place where we rightfully belong.

In the packaged express field, as a further illustration, practically all of the plasma that is transported in this country is transported by Greyhound for the bus industry.

I have a great respect for the railroad industry. It is a great industry. I do not believe they have scratched the surface as to what they can do. I think that technologically they are equipped to handle bulk freight of long distances. I know they are not equipped to handle passengers. According to the National Safety Council, the Greyhound is five times safer in the bus industry. Our costs run somewhere between 42 and 43 cents a mile.

I only point these things out to show you the weakness of the bus industry in not having told people what they can do and what they are capable of doing, and I believe there is a great future as far as the financial world is concerned and also if we get a better look from the regulatory people.

Now we do have some problems. Our problems are not unique. Forty-eight or forty-nine cents of every dollar goes into labor and when you get the spiral waves that you have today going on in all industry, we have that problem. Our answer to it, like the answers of our competitors in the transportation field, is greater gross. I think that is coming.

We have another problem that I would like to touch on. If I may, I would like to quote from a railroad annual report. The head of our largest bus company recently complacently predicted with a degree of certainty we shall endeavor to confound that the newly projected toll-free highways will enable him to finish his job of running the railroads out of the passenger business.

What are the facts as far as transportation is concerned? I cannot speak for the industry, but I do know in 1956 we in Greyhound paid four cents a mile in taxes. If that does not support a highway system, I do not know what does. I think someone ought to take a fair look at it. In 1934 the Eastman report showed we paid our way. Since then, you know what happened to taxes. The Department of Commerce is making a study of whether our industry pays its way, and we pay our way even though the railroad industry does not think so, because we have taxes on our terminals, such as they do. But, basically, with the income that can be produced through the new highways, enabling us to give better service, enabling us to perform better schedules,

enabling us to provide service to communities that will come into being, any study that is made now will show you will not have any great cities of the future; rather, there will be a city along the entire Turnpike from New York to Chicago, they tell us. Certainly, the airlines do not want to serve those kind of people. They are going to bring in jets. They are going to be further out in the country. They are expensive. They belong in the long haul field. It is there we can prosper and we can grow.

One of our main problems and our biggest market is the people that are using the private automobile. The reason I say we are not considering the airlines and railroads as competitors is because that is not where we are going to get our people from. 86.7 per cent of the people that make trips between cities in this country go by private car. If we can get 1 per cent of that in the bus industry or 2 per cent

in the bus industry we would have all we could handle with present-day facilities until we can get more. That is our market and that is the reason, our advertising is slanted not against the railroads or not against the airlines but at the business of the driving car people.

We have something else going on for us on this particular thing. Every city I have visited, and I have visited many in every state, Governor McFarland in Arizona, Governor Knight in California, the Mayors of the various cities all ask, What are we going to do with the congestion in these cities? How are we going to handle the increased traffic? Sure, they are going to get over the highways with the better ways, but what are we going to do with the cars when we get them into town—just another reason why people are going to have to find some form of mass transportation, and I think they will find it by bus.

Chesapeake and Ohio Railway

WALTER J. TUOHY

President, Chesapeake and Ohio Railway

IN THE LIGHT OF THE MANY FESTIVITIES that are going on in Cleveland today, we feel signally honored to have this fine representative group to hear us talk about the C&O.

It is a great pleasure to be here today and meet with you folks. We have in the past met with financial analysts in New York, in Boston and here in Cleveland to tell our C&O story. I want to take this occasion to commend your fine organization. It is unquestionably doing a great deal of good, especially for those companies you invite to speak. It makes the management work like the dickens to gather facts that they should know, but probably do not unless you revive their interest. We had to prepare very carefully for this audience, because certainly it is an analytical one. I applaud the comprehensiveness of your analyses. I commend you, too, for the courteousness that always attends your meetings and for the remarks and the questions which you prepare.

It is very easy for me to be here today because I brought my brains with me in the persons of our management team. They are not all at the front table, but they are in the audience. I hope you will have the opportunity to meet them and give us the opportunity to meet with you. We could not put everybody up here to talk.

I say that I am proud to have that management team here because in judging a company, I know you evaluate its management first, whether it is steel, a railroad, coal or what have you. So the management team is going to talk and I am just going to kind of pitch along. There are four men here I would like to present to you. Starting on the right is Jimmy Doyle, vice president of traffic of the C&O.

He is a young fellow who started down in Virginia, where they start working in knee pants, and he has been working for the traffic department of the C&O Railway for 35 years.

The next gentleman is one who probably most of you know by first name. When I took this job of mine in 1948, one of the first things I did was to look around for the best financial man in the business. And that man was a blushing, retiring gentleman with the General Electric Company, a trouble shooter who had been all over the world. We thought that he could find his own world in the C&O, looking at our financial problems—John Kusik, vice president-finance of the C&O Railway.

The good-looking gentleman at the far left is a combination of many, many talents. He was a college president, and believe me he is as good in the field of business as he was as president of West Virginia University — Charlie Lawall, vice president of coal traffic. Incidentally, the C&O is the only railroad I know of that places such importance upon coal that it has a separate vice president who lives and breathes and, I think, dines on coal as a daily appetite.

We have another young fellow here who is a third-generation C&Oer. He has had experience in engineering, maintenance and operations, as vice president in charge of these functions. If he were a Dutchman, we would call him the "Flying Dutchman," because he is one fellow in this business, the only vice president I know, who has his own business plane to get around and inspect the railroad—Mr. M. I. Dunn, vice president-operations.

These are the gentlemen who will give you the story of the C&O Railway.

Now I am going to give you a few figures.

I have here a digest of earnings report from The Wall

Street Journal of May 2. There are 84 companies shown in this report, some of them highly important companies. But there is only one company that shows its profits through April 30 on May 2 and that is—blushingly, I say—the C&O. There is one other company in the report that shows earnings to April 14—the International Resistance Company. All other companies' reports are to March 31 or earlier. That is why I say that you probably have read everything about the C&O. We feel that it is a good thing to have these facts quickly, because the quicker you get the facts the faster you can act.

A GOOD YEAR FOR THE C&O

You all know that C&O had a good year, the most outstanding one in our history. We had the highest earnings, we paid the highest wages and the highest dividends in our history. Our net was around \$67 million. Our per share earnings were \$8.28. Our gross was around \$419 million. Our coal revenues were in the neighborhood of \$219 million, our revenues from merchandise around \$167 million.

In net railway operations—that is to say in activity exclusively railroad and not oil, gas, etc.—C&O was fortunate to be No. 1 in the business. In net income, C&O was No. 3.

"Business Week" carried a list not long ago of forty-six companies who were the top earners last year. Starting with General Motors, we were No. 30 out of the 46.

Also, from the \$600 million which we spent on improvements and developments in the last ten years' time, we finally moved into that "billion dollar class," in total assets.

I am not giving these figures just to import bigness, because I do not think that bigness in itself is any asset. We are simply trying to show that it takes a lot of money, a lot of investment, for a business today, and we should get an adequate return for that money.

We are going to spend \$110 million this year on expansion and improvements, and we are just one railroad—5,000 miles. The General Electric Company is taking great credit and proper credit for the fact that they are going to spend the colossal sum of \$225 million this year. So if we spend half as much as General Electric, I wish that we were half as good in the way of profits.

These are a few of the thumbnail facts, in case, which I doubt, somebody overlooked reading them.

Now the lifeblood of a railroad, or for that matter any industry, is sales. Maybe I am prejudiced on that because my background is selling. I think that if you have a good sound sales organization you are well on the way. And with railroads, sales means traffic. So to start the ball rolling, I am going to ask the two traffic gentlemen here to tell you about sales on the C&O.

A few years ago, as you know, the C&O was considered pretty much a coal railroad—about 80% coal. After a very intensive program of industrial development (and a lot of leg work by a young man who is at the head of this activity now and who has been in this department for thirty-five years) the merchandise revenues of the C&O are almost one-half of total freight revenues. They were more than one-half in 1954 and they will probably be about 45% of the freight revenues in 1957. I am going to let Jimmy Doyle tell that story. . . .

JAMES E. DOYLE

Vice President, Merchandise Traffic

For the Merchandise Traffic Department, every year is the year of the big M's—modern merchandising methods. We do not claim to be magicians. Our hope is to produce a better product through honest sincere sales and making the best of our resources. Our 56 offices represent the railroad in all of the 48 States and Canada. In many instances our representative is the only contact our patron has with the company and his judgment of our company is naturally influenced by the impression he makes.

Our department is a customer-service department, encompassing all traffic except coal and passenger. These activities include pricing, servicing and sales of our product to the shipping public.

Many of you are familiar with the physical layout of our property. Probably some of you are not aware of our operation across Lake Michigan between Milwaukee, Manitowoc and Kewaunee, Wisconsin, and Ludington, Michigan. This fine fleet of seven train ferries handled over 100,000 loaded revenue freight cars last year, as well as 68,000 automobiles and 148,000 passengers. This fleet enables us to provide fast service between western and eastern points and by-pass congested terminals.

Although our rails are principally east and west, we do handle a good portion of the commerce of the South, including Florida, through the medium of our routes via Richmond, Virginia, Elkhorn City, Kentucky, and other gateways. Our interests extend to every point freight is shipped, received, or controlled.

Last year, our Port of Newport News, Virginia, handled over 1,300,000 tons of import ores of all kinds, in addition to a varied assortment of commodities ranging from tobacco to newsprint. Our export tonnage is also substantial, consisting mainly of automobiles and parts, food products, cigarettes and other manufactured items. Work is nearing completion at Newport News on a new bulk unloading facility to better enable us to increase our ore imports. Mr. Dunn will tell you more about this.

New plants bring not only additional tonnage to the railroad, but also growing and prosperous communities along the line of road. Cleveland boasts of the best location in the nation. We feel the C & O is blessed with the best locations in the nation. From the Great Lakes to the Atlantic Ocean we have an abundance of attractive industrial locations. In the post-war period from 1946 through 1956, we have located more than 1,200 new industries. We are proud of Mantague, Michigan, where Hooker Electrochemical, DuPont, and Union Carbide have neighboring plants where farm lands existed a few years ago. We point with pride to the new Lincoln plant at Wixom, second largest of Ford's 21 plants; the Kroger warehouses being constructed at Detroit and Grand Rapids, and the DuPont plant at Maysville, Kentucky, to mention a few. At the other end of our railroad, in tidewater Virginia, Dow Chemical is building a synthetic textile fibers plant and American Oil has just dedicated a huge \$35 million refinery, the first in Virginia, while Virginia Electric & Power Company is building a large electric generating plant next door.

We look to our industrial development activities as a new products division, who by research can best serve industry seeking new sites and suggest ideal locations to growth industry desiring locations to expand.

Our modern fleet of freight equipment is second to none, providing dependable, scheduled, fast manifest trains. To furnish up to the minute information concerning shipments, our Car Location Information Center at Huntington, West Virginia, will begin operations on Monday, June 3rd. The latest car movement information will be sent to our sales offices by teletype to better serve our customers. This will be the most modern installation of its kind in the country. Our dependable train service, used in coordination with this bureau, will enable our customers to in effect use railroad cars as traveling warehouses, thus reducing inventories and operating costs to them.

C & O, lest I should imply otherwise, is not without competition. It can be said there is a "sufficiency" of competition. We are in favor of and are contributing our efforts to modernizing the rate structure of the railroads to preserve our competitive position with other forms of transportation.

Time will not permit me to say more, but I do want to tell you we are optimistic for the future. In 1932, our merchandise revenues were slightly in excess of \$35 million. Last year, they reached a new peak of over \$170 million, or almost five times 1932. Thus far this year we are running about the same as last year's pace. I am confident that the year-end tally will show another record in C & O merchandise revenues.

* * *

C. E. LAWALL
Vice President, Coal Traffic

Coal is the most important commodity in tonnage and value that the Chesapeake and Ohio Railroad transports. Last year the gross revenues of the railroad from coal amounted to 221 million dollars. As the average number of days worked per year by coal mines on the Chesapeake and Ohio is about 200, every day the mines work, our coal revenues amount to more than 1 million dollars. This is one reason that we consider coal "Black Diamonds."

Last year national production of bituminous coal in the United States amounted to 500 million tons. Mines served by the C & O produced almost 66 million tons of this total, or over 13%. The outlook for this year indicates a national production of about 516 million tons, with the C & O originating approximately 70 million tons of this total.

One of the most important requirements in operating a coal mine is an assured supply of railroad cars. No matter how well equipped or efficient a coal mine might be, if it does not have coal cars, it cannot market its product and the mine would not work. Last year, as has been the case for many years in the past, not a day's production was lost at a mine on the C & O for lack of coal cars. The C & O had on hand on April 1st of this year a fleet of 55,000 coal cars. We are amplying this large fleet both by building additional cars in our own shops and by purchasing others from outside concerns.

The bituminous coal industry has steadily increased its production since 1954 and there are many estimates made as to its future growth. Calculations have been made as to what the production would be in 1975. I think it is significant that the consensus is to the effect that there is to be a continuous long-term growth of the industry. This growth potential is due to a number of factors. In fact, the expanding market for coal in our country is already reflecting the increasing demands of the growing electric power, steel and chemical industries.

Last year the electric power industry consumed 155 million tons of coal. The industry expects to expand more than three times by 1975 and about two-thirds of this power will be generated from coal. This in itself, according to Philip Sporn, President of the American Gas and Electric Company, would require an annual total of 475 million tons of coal, or almost as much as the entire national production of coal last year.

The expansion of our domestic steel industry must also be met by an increased production of coal. Mr. Roger Blough, Chairman of the United States Steel Corporation, recently stated that the steel industry will have to increase its annual capacity 50 million tons by 1975. This means an average increase of 2 3/4 million tons of coal per year for this purpose.

It is estimated by 1975 there will be 10 million more families in America, or 40 million more people. Inasmuch as the average American family uses energy to the extent of 9 tons of coal per year, this increase alone in the next twenty years will amount to over 300 million tons of coal if the consumption per capita did not increase. It is well known, however, that the energy demand per capita is on the increase year by year, and it is reasonable to expect, therefore, an increase as much or greater than this tonnage.

The territory served by the Chesapeake and Ohio contains the greatest reserves of high-quality coals in the world, including some of the best metallurgical coals that are to be found anywhere. These reserves are sufficient to keep the railroad in business for well over 100 years.

The outlook for a continuation of a strong export coal market is excellent. The reason for this is due to the following facts: The post-war activities in countries of Europe and Asia have been so great that these countries are compelled to seek additional coal supplies beyond the ability of their own mines to produce. As a result, they have become dependent on the high-quality coals of America to meet their needs.

It is expected they will continue to be our customers as long as we can remain competitive. One of the more vulnerable factors in the delivered cost of coals in Europe was the runaway ocean rates a year or more ago which threatened to completely price American coals out of European markets. You are all familiar with the formation of American Coal Shipping, Inc., with the announced intention of providing more ships to carry American coals to Europe in order to stabilize ocean rates and thus keep the delivered costs within reason and on a competitive basis with European coals. This is a very important development in the export coal trade.

Estimates of total overseas exports for the nation approximate 55 million tons this year, up 7 million tons from last year. C & O's share of this market last year was approximately 20 million tons, and it is anticipated that it will reach 23 million tons this year. To handle the ever-increasing tonnage of overseas export coal, a new pier was recently constructed and other plans are being made for improvements to expand even further the handling of export coal at Newport News, Va.

We keep abreast of our overseas coal markets in many ways. We have many contacts with the large importers of coal in the European and other foreign countries. Mr. Tuohy has been keeping in close contact with this market by visits overseas and contacts with many importers who come to see us in this country. We have had a number of people from England, West Germany, France, Holland, Italy and Sweden, visit the coal fields of the C & O to discuss their problems with our coal producers and with us. Without exception, our foreign visitors stated that the European countries will be dependent on our coals to supplement their former sources of supply for many years to come.

An ever-increasing standard of living in these countries is making it necessary for new industries to be built to make the things that the people demand. This is resulting in a general prosperity in these countries which is being reflected in increased exports from our country. This growth in exports is expected to continue for many years. Some of our leading forecasters are predicting it might eventually reach 100 million tons a year.

The movement of coal from mines which we serve to ports on Lake Erie for further movement by lake ships, constitutes one of the most important markets for C & O coals. Our lake terminal at Toledo Docks, Ohio, annually handles more coal than any other railroad and approximately one-third of the total lake cargo coal moved to all Lake Erie ports. Last year we dumped over our Toledo Docks almost 17 million tons of coal, only a few thousand tons less than the all-time record established in 1947. We expect to do as well or possibly a little better this year. Improvements are being made at this dock to facilitate moving even greater amounts of coal than at present.

The strong demand for coal has caused considerable activity in the development of coal properties. Numerous companies are seeking new acreages or opening new mines within the C & O territory. Many new mines are contemplated or have been put into production. Three new mines are being opened up at this time and each of these mines will produce 1 million tons of coal per year. Another mine is in the process of being developed and will have a production of 500,000 tons per year. The number of smaller mines which have reopened during the past year have a total capacity of 2½ million tons per year.

All of these expansion activities on the part of the coal industry indicate that coal will be in a position to supply energy needs of this country in the face of expanding energy requirements, and as a result of forward-looking plans, we believe that the coal industry is establishing a firm pattern of growth and the outlook for coal is indeed very promising.

M. I. DUNN
Vice President, Operations

Operations' job is to maintain our plant and equipment and to operate trains with safety, economy and dispatch—to carry the traffic secured by those who have preceded me on this program. This task involves the services of 30,000 of the railroad's 36,000 men and women. Operations are completely dieselized with 1,018 diesel locomotive units in service and 55 more on order. Other tools of Operations are 91,000 freight cars, 6,000 miles of track, 7 car ferries, 6 ocean tugs and one Twin-Bonanza flying office car. Salaries and wages charged to Operations are running at the rate of \$170 million, total operating expense \$280 million annually.

Operations has a continuing series of formalized cost reduction programs aimed at improving our operating ratio. The three-year program completed at the end of 1956 had a goal of \$15 million annual savings in operating expenses which was exceeded by \$5,584,000, of which a major portion was attributable to dieselization.

We are now in our second three-year program, designed to produce operating savings to offset anticipated cost increases of \$20 million over the next three years.

Each of our three regional managers, our chief engineer and our chief mechanical officer has an assigned quota of these cost reductions. Indicative of their accomplishment is the fact that although the 12 month moving average operating ratio at end of April was 68.6, the March and April ratios were 67.4.

Let me sketch a few of the projects from which we expect further major cost reductions:

First, to increase ton miles per train hour, the product of load times speed. For the first quarter of 1956, this indicator was 66,000. The figure for March, 1957, was 78,252, an increase of almost 20 per cent. Translated into money, approximately three quarters of a million dollars was saved in the first quarter of 1957 as compared to the same period of 1956.

Two hundred miles of CTC in heavy traffic territory is under construction or authorized and an additional 200 miles is under study.

With the resurgence of coal we have completed separation of eastbound coal and manifest yard facilities at Clifton Forge, reducing delays to each class of traffic. At Russell, a new \$5.5 million electronic manifest hump yard will go into service this fall. It will greatly expedite the movement of scheduled time freights through this, the largest terminal serving a single railroad anywhere.

Our three coal dumpers at Toledo will be augmented next summer by a fourth of new design. It will not only load lake carriers faster than any existing Great Lakes facility but can also load ocean-going vessels. Its design was influenced by the demand for quick vessel dispatch and the approaching completion of the St. Lawrence Waterway.

On January 20th this year an additional coal dumper was put in service on an existing pier at Newport News. To date it has dumped 1½ million tons into vessels. The freight revenue we have reached thus far from this source

is almost twice the 3½ million dollars cost of the dumper.

Under construction at Newport News is a third coal pier which will be the world's most modern in every respect. When the volume of export coal increases we shall be prepared.

Tomorrow, the largest cargo of coal ever placed in a ship will be dumped at Newport News over our Pier 14. This vessel, the S. S. Richard, loaded at the same pier April 29, 1957, with 23,500 tons of coal for her maiden voyage to Europe. Tomorrow she will take 27,000 tons. Her builders conferred with my people before her keel was laid to be sure that she could load at our existing piers. If she had been one foot higher she could not have loaded coal at any port in the world. She would have been larger if facilities had been available to load her. Larger bulk carriers are sure to come. When they come to Newport News we shall be ready to load them.

Nearing completion at Newport News is an \$8 million import ore pier and car loading plant. This facility will, in the truest sense, result in cost reduction. The same cars that bring coal to Newport News will carry ore on their westward trip—the acme of equipment utilization.

The new pier installations incorporate innovations suggested on two recent trips with associates to North European ports and to plants of European manufacturers. The ore unloading cranes being erected at Newport News were manufactured in Germany.

As to our equipment program, of our 91,000 cars, 56,000 are open-top hoppers. We are manufacturing in our shops at Raceland, Kentucky, 24 new 70-ton hoppers a day. Here we shall build 5,600 of them this year at a cost of nearly \$40 million at a saving of \$500 a car under manufacturers' prices, or \$2,800,000. Originally conceived as a car repair facility, Raceland has within the last 12 months produced more than 4,200 new cars and will continue exclusively on new car construction until May, 1958. We are able to build these cars at Raceland because our car fleet has been maintained in such good condition that we will not have to rebuild any old coal cars this year. Instead of laying off our work force we converted to a manufacturing plant, achieved stabilization in this highly skilled employment area. Our percentage of bad-order cars was, as of April 1st, lowest of any railroad, six tenths of one per cent.

Significant economies are being achieved in roadway and track maintenance through development of mechanization by our chief engineer's expanded Operations Research Group. Track labor cost \$12½ million in 1956. Had the same program been carried out by the methods used in 1949 at 1956 wages, the cost would have been \$24.5 million.

Tomorrow in Huntington, West Virginia, we preview a new development in freight car information. For the first time on any railroad, exact car location information will be almost instantaneously available to our shippers and receivers through our Car Location Information Center—CLC for short. It is serviced by the world's largest railroad teletype network of 24,000 miles of circuits connecting 238 teletype installations.

Time does not permit a complete picture of all the functions to be performed by the center. Our first goal is to

provide the ultimate in prompt information to patrons, second, to effect savings to the railroad in freight car utilization, distribution and reduction in terminal delays and, third, to generate electronically our operating statistics and reports as a by-product of records mechanically produced by the center.

These few words about our activities emphasize the money we are willing to spend to further efficient operations when we can foresee adequate returns.

Of course, the objective of all of us here is to produce the kind of service that will please our patrons and reward our shareholders. Our traffic departments are selling this kind of service. Despite mechanization and automation, which have played no small part in our operating improvements, the increased business stemming from their salesmanship has recently brought C & O to the highest level of employment since 1952.

* * *

JOHN E. KUSIK

Vice President, Finance

Ladies and gentlemen, I would like to return for a moment to the very gracious introduction made by Walter Tuohy. Let me say that I have indeed found an exciting new world on the Chesapeake and Ohio. This is, of course, due to the exciting, warm, human relationships that I have been able to establish, the climate that we have on C & O, under the leadership of Walter Tuohy. In addition, working with Mr. Tuohy always provides great challenges because none of us are ever quite able to keep up with him.

I would like to talk first about making two ends meet. On the Chesapeake and Ohio Railway this means having money available when it is needed—for normal operating purposes, for research, for capital expenditures, and of course for the maintenance of a regular and growing dividend rate. The ability to do this is the acid test of any organization's soundness.

My assignment is to worry about making two ends meet, and please note that I emphasize the word "worry." The actual business of making two ends meet is in the hands of my associates, in the first instance, the traffic people, through whose efforts money flows in, and in the second instance, the operating people, and especially my friend, Dunn, who, by his own testimony, is the greatest spender of money on the railroad. Seriously, though, this is actually as it should be. We are working together on this business of making two ends meet, and Walter Tuohy is second to none in his watchfulness over how we do this job.

The ability of a growing railroad to make two ends meet rests largely in the growth of earning power. It is the main source of a railroad's financial strength. This is the reason why we, on the C & O, emphasize the importance of earning power growth.

You have heard the story about C & O's creative selling and C & O's creative operation. These are major factors in its earning power growth and of our ability to make two ends meet. You have heard, too, about the industrial and mine development, creation of new capacity, modernization, ability to make use of facilities because of high standards of maintenance and continuing cost-reduction programs. All

of these factors add many millions of dollars to the growth of C & O's earning power.

Now there are certain other collateral factors which further support C & O's earning power growth. Some of these are of financial and accounting character. For example, on C & O we follow the policy of setting up conservative reserves for all contingencies. The best example of this is our policy of setting up adequate reserves for taxes. However, once we have set up these reserves, we try to pay out as little as possible, thus saving as much as we can for earning power growth.

The next factor is C & O's borrowing policy. Not too long ago, we were severely criticized for this borrowing policy. However, as you know, we have been going through a very severe period of inflation and there is no end in sight. So today we are paying back in cheaper dollars those we borrowed some years ago, when their purchasing power was much greater. A reputable economist has estimated that C & O's borrowing policy has added to the true net worth of the shareholders as much as \$100-million.

There is one other item of interest that I would like to mention and it has to do with our program of capital expenditures. Whenever we embark on projects of expansion or replacement, the spending of capital funds, there are always associated with these expenditures charges that must be charged to operating expense accounts. In connection with this year's program, we will probably charge as much as \$5 million to operating expenses. My point is this: If we elected not to spend money for capital purposes, we would of course eliminate these expenses. It is a factor of flexibility in our picture, and an important one.

Lastly, I will mention the question of track accounting. It again provides a substantial cushion or offset to any inflation of earnings.

In the life of a railroad, the replacement of rail, ties, and ballast is like replacement of windows, flooring, roofing or plumbing in manufacturing plants of General Electric and General Motors. The only difference is that because of special characteristics of a railroad, we have much more of this type of expense. As a result, we charge to expenses, at today's prices, the costs of these replacements and thus obtain a substantial protection against inflation.

MEASUREMENT OF EARNINGS

Now a word about measurement of earnings. It is one of the most important aspects of your job, of the jobs of all managements, and, of course, of C & O's management. Unless we know how to measure earning power reliably—not so much what happened last year, the year before or many years ago, but what is going to happen this year and next year and five years from now—we would not know how to make two ends meet.

As you know, there has been a lot of shouting going on

about this general question, measurement of earning power, in the public press: Does the Interstate Commerce Commission accounting system produce over-statements of earnings? Some uninformed, almost hysterical articles have appeared in the public press. There has been a Congressional hearing by a subcommittee. A number of people testified. I testified, too.

Analysts generally, as I have observed through my communications with them, have remained calm, which is as it should be. In my opinion all of this represents much ado about very little.

Insofar as C & O is concerned, or any other company is concerned, it is always a mistake to pick out one or two characteristics in a method of measuring earnings and scream loudly that these things are bad. We must always look at the measurement systems as a whole, including the net effect, the sum total effect of all of the management policies.

Now we will look at our measurements of C & O earnings. It is my considered opinion that C & O's earnings are properly stated. There are no overstatements of C & O's earnings. Even the much talked-about amortization benefits are much more than offset by the many things we do on C & O.

Now a word about the outlook. As Walter Tuohy mentioned, we expect to spend some \$110 million for capital purposes this year. We are always mindful of the show window about which you are concerned—the working capital position. And I am very happy to report to you that despite the large proposed expenditures, some of which have already taken place this year, currently our net working capital is close to \$40-million, and by the end of the year it will still be roughly in that area.

As you know, C & O revenues have been running ahead of last year, but net income, for various reasons, mainly because of poor weather conditions, lagged behind.

The turning point came in March, when we reported net of several cents more than the year before. April was ahead of last year by 6 cents. And the outlook for this month is around \$39-million in gross revenues, \$6.3 million in net income, or 78 cents a share. . . about 3 cents more than last year.

A YEAR OF INCREASED INCOME

The first half of this year should be about even with last year. This tends to substantiate the forecast made by Mr. Tuohy at the annual meeting. He said that this year, as a whole, should be at least as good as 1956, which as you know produced all-time record earnings of \$67-million in net income, or \$8.28 a share. We hope to do better. We believe that this year is likely to become, with the exception of the pause in 1954, the eighth consecutive year of increased net income for C & O.

Alabama Power Company
Birmingham, Alabama

Georgia Power Company
Atlanta, Georgia

Gulf Power Company
Pensacola, Florida

Mississippi Power Company
Gulfport, Mississippi



A new chapter in the story of

SOUTHERN PROGRESS

The dynamic growth of the Southeast is reflected in The Southern Company's eighth annual report. The company, through its operating affiliates, continues to provide ample electric power to meet the increasing needs of this region . . . firm in the belief that *the forward march of the South is just beginning!*

Highlights of The Southern Company System's 1956 Operations

CONSOLIDATED NET INCOME of \$30,133,000 exceeded 1955's by about 14%. Earnings per share increased from \$1.34 in 1955 to \$1.53 in 1956. The quarterly dividend rate was raised from 25¢ to 27½¢ per share, effective with the March 6, 1957 payment.

OPERATING REVENUES which first passed the \$200,000,000 mark in 1955 amounted to \$227,530,000 in 1956, an increase of some 9%.

OPERATING EXPENSES came to \$98,228,000, approximately 8% more than in 1955.

SALES OF ELECTRIC ENERGY, amounting to more than 16 billion kilowatt-hours, were up 9%.

CUSTOMERS served directly numbered 1,372,000 at the year end, an increase of 4% over 1955.

CONSTRUCTION EXPENDITURES totaled \$85,328,000 — approximately \$12,000,000 more than in 1955. Plans for 1957 call for expenditures of about \$140,000,000. New generating capacity totaling 865,000 kilowatts is presently under construction.

PURCHASE OF THE GEORGIA POWER AND LIGHT COMPANY PROPERTIES, negotiated in 1956, was completed in March, 1957, and Georgia Power Company began supplying electric service to approximately 40,000 additional customers in 20 south Georgia counties formerly served by the acquired system.

HYDROELECTRIC DEVELOPMENT IN ALABAMA will move conspicuously forward with Alabama Power Company's program for the construction of four new power dams and the enlargement of an existing dam and powerhouse on the Coosa River, and the construction of one dam and installation of electric generating facilities at two dams on the Warrior River. The program involves an ultimate installation of more than 600,000 kilowatts of hydroelectric capacity.

SOUTHERN ELECTRIC GENERATING COMPANY, owned jointly by the Alabama and Georgia Power Companies, was organized in May, 1956, to build and operate a large steam generating plant on the Coosa River, close to abundant coal deposits in Alabama and within easy transmission distance of the Georgia, as well as the Alabama electrical loads. First of the plant's four 250,000 kilowatt units is scheduled for completion early in 1960.

ATOMIC POWER RESEARCH was continued during 1956 by participation of the system companies with a group of other utility companies and manufacturers in the construction of a fast breeder atomic reactor near Monroe, Michigan. Through this work they expect to acquire technical knowledge and experience which will assist them in developing their own nuclear power plants at the appropriate time.

*For a copy of
the Annual Report
write:*

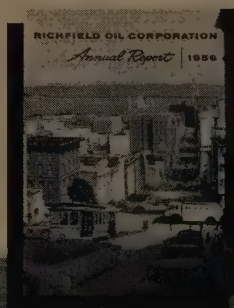
The Southern Company
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"The last half of the twentieth century belongs to the South!"

RICHFIELD 1956

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the fast-growing
far west*

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1956 annual report.
Write: Secretary
Richfield Oil Corporation
555 South Flower St.,
Los Angeles 17, Calif.*



BALANCE SHEET AT DECEMBER 31, 1956 AND DECEMBER 31, 1955

ASSETS	1956	1955	LIABILITIES AND CAPITAL	1956	1955
Cash and Government securities...	\$ 23,238,322	\$ 27,655,825	Current liabilities.....	\$ 29,983,628	\$ 26,880,339
Accounts receivable (net).....	43,898,472	35,701,797	Long term debt.....	78,000,000	81,000,000
Inventories	35,972,280	36,698,311	Stockholders' equity:		
Investments and advances (net)...	8,854,177	7,017,494	Capital stock	74,699,277	74,699,277
Properties, plant and equipment (net)	199,813,469	192,329,432	Earnings employed in the business	134,483,756	121,910,135
Deferred charges	5,389,941	5,086,892			
	<u>\$317,166,661</u>	<u>\$304,489,751</u>		<u>\$317,166,661</u>	<u>\$304,489,751</u>

OPERATING STATISTICS—BARRELS	1956	1955
Production of crude oil—gross		
Western Hemisphere.....	26,566,000	26,723,000
Eastern Hemisphere	2,369,000	1,500,000
Production of crude oil—net		
Western Hemisphere.....	20,743,000	20,729,000
Eastern Hemisphere	2,073,000	1,312,000
Crude oil processed at refinery.....	44,479,000	44,508,000
Sales of refined products.....	47,887,000	50,876,000

INCOME ACCOUNT FOR THE YEARS 1956 AND 1955

	1956	1955
Gross operating income	\$254,043,152	\$245,295,088
Costs and expenses.....	211,434,386	196,224,541
	<u>\$ 42,608,766</u>	<u>\$ 49,070,547</u>
Interest expense and nonoperating income—net ..	(1,535,145)	(1,561,099)
	<u>\$ 41,073,621</u>	<u>\$ 47,509,448</u>
Provision for Federal taxes on income.....	14,500,000	17,900,000
Net income	<u>\$ 26,573,621</u>	<u>\$ 29,609,448</u>
Net income per share.....	\$6.64	\$7.40



RICHFIELD OIL CORPORATION

Executive offices: 555 South Flower Street, Los Angeles 17, California

MOTOR CARRIER PRIMER

The Motor Carrier Industry—Its Regulation—and Piggyback

MARVIN J. BARLOON

Professor of Economics, Western Reserve University

THE MOST REMARKABLE FEATURE of the trucking industry is its vigorous long run growth. The major forces which have brought about this growth appear to be continuing into the future, and, for this reason, rapid development may well characterize the future of the industry as it has the past.

Let me review briefly the growth of intercity trucking and explain why it appears likely to grow substantially for a number of years yet. Then, if I may, I should like to size up some of the major unpredictables bearing on the industry with particular attention to those of most concern to the various categories of carriers-for-hire.

The progress of intercity trucking has been remarkable, not only for its spectacular rate, but also for the long period over which it has endured. As long ago as 1929, the industry had become a sizeable one. In that year it carried 18.2 billion ton-miles of intercity freight, equal to about three times the volume of all the air cargo in the country in 1956. What's more, it continued to grow during the depression, and by 1940 carried three times as many ton-miles as it had in 1929.

The advance was greatly retarded during World War II by shortages of essential materials and supplies, but was resumed, indeed, with some acceleration, after the war. In 1946, 82.0 billion ton-miles were carried intercity, and by 1955, this volume had almost tripled again, to 226.2 billion.

TRUCKING CONTINUES TO GROW

Not only has intercity trucking been growing. It has been growing considerably faster than the growing national economy it serves. Trucking, as a mode of transportation competes almost exclusively with rail shipment and only in exceptional instances with water carriage or pipelines. In 1929, intercity truck carried 3.9 percent of the ton-miles carried by trucks and railroads combined, in 1940, 13.4 percent, and in 1955, 26.4 percent. In other words, trucking has progressed to the point where it is carrying over one-quarter of all the ton-miles of freight moved intercity by wheeled vehicles, and one-third as much as the railroads carry.

One is tempted to explain this growth by reference to the newness of trucking as a transport technology. This explanation was probably good enough up to World War II. But, by now, trucking is no longer so new, and it keeps

right on growing. An even more frequent explanation is the alleged subsidization of trucking through its use of the public roads. This explanation, too, falls down on the question of timing. A ton-mile of trucking was just as subsidized in 1929 as it was in 1955, but the industry grew a whole lot faster in the latter year. I do not want to pass on the existence or non-existence of a trucking subsidy here; but merely to point out that a growth based primarily on a constant rate of subsidy should have approached its potentials in a much shorter time than thirty years.

I think the real explanations are much more near at hand and less debatable than either of these. If we look at what is going on in the economy the transportation system serves, and relate the evolving needs of shippers to the comparative services which trucks and railroads provide, some much more convincing explanations emerge.

Let us bear in mind that railroads provide transportation at low cost achieved by the massive unit of movement—the long freight train. By contrast, trucking provides individualized transportation in small units at considerably higher cost. In 1955, the average railroad train carried 1,372 tons of freight. But, according to the Bureau of Public Roads, the average tractor-trailer combination carried only eleven tons. With the passage of time, railroad movements of freight tend to become even more massive. The length of the average freight train increased from 53 cars in 1947, then the highest in history, to over 66 cars in 1955.

Now, the mass transportation of the railroad normally means a much longer transit time. This is because it takes time to make up and break up trains. A loaded freight car released to a railroad will be moved about in the yards for anywhere from six to forty-eight hours at each end of the run. In addition, switching at junction points consumes time. A loaded highway trailer, on the other hand, moves directly from origin to destination without these delays. As a result, a shipment of general freight which normally takes a week by rail can usually be delivered by truck in two days.

THE TRUCK LOAD IS SMALLER THAN THE CARLOAD

Furthermore, the preparation of goods for shipment often takes time even before they are placed in transit. Note that a truck load is a much smaller quantity than a carload. In a sense, all truck shipment is automatically LCL. This means that the shipper need not accumulate finished

stocks to make up carload lots. For a variety of reasons, truck shipment often requires less packaging and dunnage than rail shipment. For many shippers, the small lot of a truckload and the reduction in packaging and dunnage produce a considerable time saving even before transit begins. Some years ago, the Association of American Railroads circulated a questionnaire among shippers as to their reasons for preferring truck shipment. Out of 1,847 citations of particular reasons, "short transit time" constituted 75.4 percent of the total.

Of course, to the extent that trucking service is more suited to his needs, the shipper has to pay a differential cost. Mass transportation furnished by the railroads is like mass production. It is very economical. Average rail revenue per ton-mile in 1954 was 1.42 cents, and it was even lower in 1955. But, for Class I intercity truck lines it was over four times as high in 1954, just short of six cents. As you know, rail rates vary widely, and intercity trucking, from its very inception has been competing for the higher-rate movements. The real question is, therefore: why do the higher-rate movements in which trucking is competitive constitute so much greater a portion of the total transportation load than they used to?

HIGHER VALUED COMMODITIES

The answer is that, to a remarkable degree, the higher-rate movements are those of higher value commodities. As the nation gets richer, a larger portion of the national product takes the form of more highly processed goods with more dollars built into them. The production of the steel industry, for example, incorporates a much larger portion of light gauge, precision rolled products than formerly. Domestic appliances are more elaborate and complex. Industrial and office machinery is more complicated and precise and incorporates many special features such as feed and indexing devices and electronic controls.

Not only can more complex and costly products bear a higher cost of transportation. In addition, they cannot tolerate as long a transit time. They represent a larger inventory investment. Furthermore, many of these complex products are now offered to the industrial or domestic consumer in a greater variety of designs, colors, and the like, so that they come closer to being tailor-made to the individual selection of the buyer. Such products become obsolete or out of style very quickly, and have to be moved without delay from the assembly line to the consumer.

Still another change which increases the value of short transit time is the increase in branch operations. In manufacturing, branch operations are often closely coordinated with each other. Production and shipping schedules from diverse points may be figured very narrowly, and less shipping delay can be tolerated than was formerly true. Likewise in branch merchandising, notably in the retailing of styled or of seasonal goods, the movements of wholesale and retail stocks need to be very closely synchronized. Naturally, in these situations, the first or second morning delivery by truck is often preferable to the three-day to a week delivery of rail shipment, even though trucking rates may be higher.

It should be pointed out, of course, that in bad weather, especially in the northern part of the country during the

winter, arrival time by rail is often more predictable than by truck. This circumstance, however, is more the exception than the rule, and has not generally proven adequate to defeat the more usual time saving of highway shipment.

Still another influence is the altered geography of our cities and industrial communities. The development of the outlying shopping center enhances the value of direct door-to-door delivery without intermediate rehandling. A large portion of our industrial expansion has likewise been locating in peripheral areas with a less exclusive dependence on the rail system than formerly.

In short, these changes in the nature and needs of the shipping community have much to do with the growth in intercity trucking, certainly to a greater extent than anything going on in the transportation system itself. Developments so manifold and far-reaching which have been spurring forward this mode of transportation at accelerating rates for some thirty years would appear to have sufficient momentum to carry on into the future. At some point, of course, trucking will approach a ceiling in its total share of the freight traffic. But, for the present it appears safe to anticipate continued growth at recent rates for at least another five to ten years.

The program now getting under way for rebuilding the national system of interstate highways will help the trucking industry in the long run. As you know, heavy trucks on the road are now greatly retarded in climbing steep hills and working their way through congested traffic of towns and cities. The new highway system will reduce the sharpness of grades and will bypass congested areas. This will reduce wear and maintenance of vehicles. Because of less movement in low gear, it will cut fuel consumption per ton-mile. By reducing over-the-road time, the new highways will increase mileage per driver-hour and, on many runs, will thereby cut labor cost. In intercity trucking, over-the-road costs constitute a much higher portion of the total than is true of railroading, and these savings will be important.

Paradoxically, however, the initial impact of the federal highway program is discouraging to intercity trucking. Under the pay-as-you-go system of financing the highways, motor vehicles started paying for the new system last July in the form of increased highway user taxes. But, while the carriers are now paying for the new highways, they don't yet have them. Instead of obtaining funds for capital construction from the investment markets in the usual manner, the federal government gets them from the motorist and from the commercial carrier out of his current operating revenues.

COST REDUCTIONS DUE TO NEW HIGHWAYS

However, as time passes and increasing mileages of the new highways come into service, the cost reductions they make possible will progressively offset the higher user taxes and eventually exceed them. The highway program is thus a short-run disadvantage and a long-run advantage.

Our motor carrier industry labors under one handicap which is similar to that which retarded our railroad industry in the past century, namely a lack of standardization of operating practice. In the case of trucking, this lack of

standardization is imposed on the carriers by the diversity of state laws. State laws vary widely as to permissible gross weight. They also vary as to the permissible weight over any one axle. They vary, further, as to the allowable distance between tandem axles under various weight limitations. They have not standardized the permissible vehicle length. While the various associations of state highway officials have recommended uniform standards, progress in this direction is slow. Yet, progress will be made and, as it is, trucking will benefit. The railroads progressed very slowly in adopting a uniform gauge of track, but eventually they achieved their goal.

All of these considerations contribute to a favorable outlook for the trucking industry as a whole. Yet, as investment analysts, I suspect that you are primarily interested, not in the trucking industry as a whole, but in the independent trucking company, that is, the carrier-for-hire. Actually, the carrier-for-hire hauls a minor portion of intercity motor freight. He is subject, of course, to all of the favorable influences which I have described. But, he is also subject to certain special influences such that he may or may not flourish to the same degree as trucking in general.

THREE CLASSES OF CARRIERS-FOR-HIRE

There are three classes of carriers-for-hire: common carriers, contract carriers, and exempt carriers. The regulated common carrier is the most important. He makes his facilities available to the general public to transport goods for compensation. He may enter the business or extend his operations only on the basis of a certificate of public convenience and necessity granted by the Interstate Commerce Commission. A little later I want to comment on the meaning of operating certification to the competitive position of the common carrier. In many instances the common carrier is limited in his operating rights as to the commodities he may handle. He often provides a regular route, scheduled service. Or, he may be certified for a non-scheduled service, either over a regular route or over irregular routes. The common carrier group also includes carriers of special commodities in specialized equipment, such as automobile carriers, tank operations, and moving vans. I need hardly point out that the fortunes of a particular carrier are sometimes quite dependent on the particular industries which may provide most of his traffic. In recent years regulated common carriers have been handling about 30 percent of the total intercity ton-miles of highway traffic.

The contract carrier, by contrast, hauls only about one-tenth as much, some 3 to 4 percent of the total. The facilities of the contract carrier are not available to the general shipping public. He operates only under continuing individual contracts with particular large shippers. Generally speaking, only the minimum rates of contract carriers are publicly reported. Their actual rates are confidential and in most cases not subject to regulation in the manner of common carrier rates. Unlike the common carrier, the contract carrier does not need a certificate of public convenience and necessity. He can enter the business or extend it on the basis of an operating permit, very much easier to obtain.

Certain motor carriers for hire are completely exempt

from any sort of economic regulation. These include certain special categories, such as the delivery of newspapers and operations wholly within the commercial zones of municipalities. But, most exempt carriers are those engaged in transporting farm and marine products. Altogether, the exempt carriers-for-hire do not appear to handle as great a volume of freight as that of the common and contract carriers.

A COMPETITIVE INDUSTRY

In considering the carrier-for-hire, let me concentrate attention on the common carrier. The big question that hangs over his future is that of competition. He is in an industry which, by nature, is intensely competitive. Yet, the regulatory system administered by the Interstate Commerce Commission protects the common carrier from the more severe rigors of competition. The common carrier is now in some danger of having much of this regulatory protection withdrawn by virtue of the recommendations submitted in 1955 by the Presidential Advisory Committee on Transport Policy and Organization. But, if he escapes this danger and if the present regulatory protection is continued, the common carrier faces some continuing loss of competitive position to the private carrier. The private carrier is a manufacturer, commercial firm, or other shipper who operates his own trucks to carry his own property. The private carrier, of course, cannot be brought into the field of rate regulation because he doesn't charge any rates.

The regulatory system protects the common carrier in several ways. First of all, it limits entry into the business. Motor carriage would otherwise be an easy business to get into. It doesn't require much capital. It is not protected by patents or copyrights. Customer relations are not unusually difficult to establish. In short, it would be about as easy for a man to set himself up as a motor common carrier as it would be to go into certain types of farming. But, entry is narrowly constricted under Part II of the Interstate Commerce Act by the certification requirement. Applications for certificates are ordinarily vigorously contested by existing operations, both rail and truck, and are exceedingly difficult and often impossible to obtain.

A second competitive protection emerges from the powers of the Interstate Commerce Commission to prescribe minimum rates. All rail and motor carrier rate reductions are made public thirty days in advance, and if competing common carriers in any mode of transportation choose to protest, the Commission may suspend the proposed rate for as long as seven months. During the suspension, the Commission may conduct hearings as to the legality of the proposed rate, and eventually may disallow it. By this process, competitive rate cutting is very substantially held in check.

The Presidential Advisory Committee recommended in 1955, that these restraints on rate competition be greatly relaxed and bills are now before Congress to put these recommendations into effect. Some of the bills would relax competitive restraints only as between modes of transportation and keep the present restraints as between individual motor carriers. Others would relax them in all applications. In either case, the competitive position of the railroads

would be greatly strengthened and the future growth of motor carriage somewhat retarded. Spokesmen for the railroad industry are vigorously promoting the enactment of certain of these bills, and the motor carriers are tenaciously opposing them. If any bill should be enacted incorporating to a substantial degree the recommendations of the Presidential Advisory Committee as to suspension cases, optimistic estimates as to the future of motor carriage would have to be considerably scaled down.

In my own view, the recommendations of the Presidential Advisory Committee are unwise because they would open the door to possible retaliatory rate wars. Indeed, these recommendations could be damaging to the railroads. It would probably prove difficult in many cases to keep a rate cutting contest between a railroad and a truck line from extending itself into a contest between railroads.

The railroads are very dissatisfied with the restraints placed upon them in reducing rates under present regulatory policy. In certain instances there is real justification for their dissatisfaction. On the other hand, the trucking companies are apprehensive over the danger of rate wars, and certainly with real justification. Yet, the views of these two modes of transportation are not irreconcilable. I believe that in time we should be able to work out an amendment to regulatory policy more selective than the sweeping proposals of the Presidential Advisory Committee and that thereby the legitimate needs of all modes of transportation may be accommodated.

REVENUE APPEARS TO BE RISING

In recent years the average revenue per ton-mile of the common carrier truck lines appears to have been rising faster than that of the railroads. This could mean some loss in competitive strength. But, if so, it is probably a temporary loss. For one thing, during a period of inflation, railroad costs do not go up as much as trucking costs. So much of the fixed costs of the railroads are determined from the level of capital outlays made many years ago at lower price levels. By contrast, the equipment of trucking companies is much shorter-lived, and a larger portion of total motor carrier costs are variable and thereby more responsive to current price levels. It appears that inflation will probably be somewhat retarded in the future, at least, in the absence of any major international crisis, and, if so, this advantage of the railroads will become less pronounced.

In addition, there is some prospect that railroads will face higher tax liabilities in the future as expedited amortization schedules reach their terminal points and earnings subject to tax are correspondingly increased. Commissioner Arpaia has stated that advance provision for the future increase in tax liabilities would reduce reported railroad income by 20 percent and lead currently to higher rail rates. The failure to make such advance provision only postpones the day when this adjustment will have to be made, although probably in lesser amounts.

I have already spoken of the benefits the trucking industry may receive as progress is made on the new system of interstate highways, and this may be combined with these two observations on railway costs to indicate that the com-

petitive cost outlook for the trucking industry is not unfavorable.

However, in his competition with the private motor carrier, the common carrier truck line is somewhat more vulnerable. In recent years, the private carrier has been taking over an increasing share of the intercity trucking business. In 1948, non-regulated highway carriers moved 59.6 percent of all intercity ton-miles. In 1955, this was up to 66.8 percent. Non-regulated carriers include, of course, certain common and contract carriers of exempt commodities. For the most part, however, the non-regulated operations are private carriers, and we have to face the fact of this growth in the private segment of the business.

The answer lies in considerable measure in regulation. For one thing, the common carrier is limited by his operating rights. He may deliver a cargo to the city of Cleveland, for example, but his operating rights may not permit him to deliver it to the Westgate shopping center. His trucks may pass through Chillicothe, but he may not be allowed to pick up or deliver freight there. His operating rights may not permit him an adequate backhaul. The private carrier is free from all these restraints. His trucks go anywhere at anytime, adapting themselves to the flow of traffic and fully exploiting the inherent flexibility of trucking as a mode of transportation.

Furthermore, the minimum rate policies of the regulatory system encourage private trucking. On the one hand, they protect the common carrier from retaliatory rate cutting. But, at the same time, they often restrain him from making rate cuts of his own to ward off losses of traffic to private fleets.

Still another factor is the 3 percent transportation tax. This is not paid by private carriage, and where a merchant or manufacturer both receives and ships by truck, the tax heightens his incentive to operate his own vehicles.

I do not believe that the differential growth in private trucking reflects any inherent economy not shared by the common carrier. It reflects, rather, a combination of public policies, and the outlook for the common carrier will alter to the extent that these public policies are modified.

Turning from the public policy to the technological field, a development of great potential consequence is the growth of the trailer-on-flatcar movement commonly known as "piggyback". As mode of transportation, this movement is now about twenty years old, but it began to grow with great vigor only about five years ago, and now, some 42 railroads provide piggyback service. There is a great deal to be said about piggyback, but I shall confine myself here to what it may mean to the common carrier trucker.

WHAT OF PIGGYBACK SERVICE

Most of the railroads hauling trailers on flatcars do not serve the motor carrier. These railroads operate the trailers themselves, provide pick-up and delivery, and bill the shipper directly at rates usually the same as over-the-road motor carrier rates. This business is directly competitive with the motor carrier. The railroads are not generally selling piggyback as a substitute for carriage by conventional freight car. It is almost entirely business which otherwise would have gone to the truck lines. To the extent that

it grows, all-rail piggyback represents a decline in the share of traffic which the motor carrier would otherwise have enjoyed.

On the other hand, some railroads provide piggyback service for the motor carriers. There are at present only eight of these. However, these eight include some of the larger and more successful piggyback haulers. This motor carrier piggyback enjoys certain advantages over all-rail piggyback. For one thing, the motor carrier can handle a movement part way by highway and send it the rest of the way by piggyback. Thus far, piggyback loading and unloading stations have been mostly in larger cities, so that this service has not been extended in great volume to small town origins and destinations. Railroad operating rights often prevent them from moving trailers over the road between piggyback terminals and points outside of their authorized terminal areas. Furthermore, many railroads lack experience in motor carrier operation. The piggyback vehicles they have been buying are commonly unsuited to economical over-the-road movement. Thus, the all-rail piggyback lacks the flexibility of motor carrier piggyback and is more limited as to the number of shipping points it can serve.

Motor carriers have been more successful than the railroads in getting backhaul movements. They likewise contribute a desirable element of volume. Piggyback is most economical and most attractive to the shipper when it represents a large volume of movement so that special piggyback trains can be moved long distances non-stop. All-rail piggyback often needs to be combined with motor carrier piggyback in the same train to provide this volume.

For these reasons it appears probable that as piggyback grows, an increasing portion of the movement will be motor carrier freight. On this expectation, piggyback is more largely a cooperative movement as between rail and highway carriers rather than a threat to the highway carrier.

COOPERATIVE RELATIONSHIP ADVANTAGEOUS

This cooperative relationship appears advantageous to the motor carrier. For one thing, the railroads offer rates to the motor carrier low enough to get the business, and this means rates at least slightly below the cost of moving the loaded trailer over the road. Furthermore, the motor carrier can iron out some of the irregularities in his business by consigning peak week-end and seasonal loads to piggyback and moving the more stable portion of his business over the highway. The economies in power unit investment and in fuel and labor costs are obvious.

There is reason to doubt that piggyback will grow to become a major portion of our overland freight traffic. Rail executives are somewhat uncertain as to its merits. For one thing, by hauling trailers for motor carriers, the railroad might enable the motor carrier to take more business away from the conventional freight car. If the motor carrier were to capture some of the higher-rated commodity movements by virtue of piggyback economies, the railroad would find itself carrying these same movements via motor carrier piggyback at much lower rates than it otherwise would have carried them by conventional freight car. Railroad freight in its conventional form is quite profitable. The unsatisfac-

tory rates of return realized by so many railroads appear to be attributable primarily to their passenger business. Obviously, the railroads do not want to risk the loss of profitable freight traffic by aiding a competing mode of transportation.

Most of the railroads in piggyback service appear reluctant to make the large investments necessary for maximum economy. Many of them continue to use standard flatcars rather than cars especially adapted to piggyback. Loading terminals are designed for the slow "circus train" type of loading. Tie-down devices fall short of maximum labor saving. This may be a temporary feature of the service, but as long as it prevails it indicates the tentative acceptance of piggyback by railroad executives. For the present there are no clear signs that this service will expand enough to become a major feature of the nation's overland transportation system.

We in Ohio have a special interest in the development of truck transportation because of our central position in the main routes of travel. Every state calls itself the "gateway" to something or other, but Ohio is, in fact, the central routing between East and West, with traffic funneling through our four eastern counties to make connection with the Pennsylvania Turnpike through the mountains and with the New York Thruway over the water level route.

TRUCKING ADVANTAGES FOR SHORT RUNS

Highway trucking is especially advantageous for short runs, and the large number of industrial centers in this state in close proximity to each other enhances the part played by this mode of transportation in the economy of the state. The Battelle Memorial Institute reports that 32.8 percent of the people of Ohio live in regions or communities which are served by truck only, with the remainder served by both railroads and trucks.

The trucking industry is also one of the state's good customers. This is the leading state in the union in the production of truck bodies and trailers. In 1954, 25.6 percent of the nation's value added by manufacture in this industry was produced in Ohio. As investors and shippers, of course, our view extends far beyond the boundaries of the state to the national transportation system serving our national markets.

With regard to the trucking industry as a whole I have spoken with some optimism here today. With regard to the carrier-for-hire, my optimism has been somewhat moderated. Please bear in mind, however, that in the context of an industry undergoing rapid growth, any adverse influence on the carrier-for-hire would probably mean, not any absolute deterioration in his position, but, more probably, continued growth at somewhat retarded rates. Furthermore, some of the major uncertain influences bearing on his future could turn as much for the better as for the worse, so that my moderation is one of unpredictability rather than of pessimism. Finally, as investment analysts, I am sure you recognize the need for closest study of the individual carrier. Their fortunes vary to an extreme degree. Some flourish while others languish, and no picture of the industry in general can answer vital questions with regard to the individual firm.

The Long Haul Trucking Industry

PHILIP H. SMALL

Vice President, Finance, Pacific Intermountain Express Co.

TRUCKERS MAKE BRIEF QUARTERLY and detailed annual reports to the I.C.C. A private statistical organization called Transport Research Inc. publishes summaries, summations and analyses of these figures on the Class I carriers, which through last year were those doing over \$200,000 a year—for 1957 the class has been reduced to those grossing \$1,000,000 and up. The figures I have used for the following data came from the Transport Research annual bluebook covering 1955 reports to the I.C.C. and their quarterly book covering the first three quarters of 1956.

There are 1156 Class I Common Carriers of General Freight Intercity in the book. That does not include all late reports, but it is a high percentage of the total. Please note that the classification as stated—I repeat, Class I Common Carriers of General Freight Intercity—excludes contract carriers, specialty carriers whether common or contract, and those whose business is predominantly local as distinguished from intercity whether special or general, common or contract. And it excludes carriers grossing less than \$200,000 in 1955.

Of these 1156, sixty, or some five percent, had average hauls of over 600 miles. The average haul of the whole 1156 was a little under 300 miles.

The home cities of these 60 were not very uniformly dispersed over the country. There were 1 to 11 of them in each of 23 states, and the other 25 states had none. Viewing their distribution in terms of the 9 I.C.C. regions and relating the number of such long-haul carriers to the amount of Class I trucking revenue headquartered in each region, the Rocky Mountain region was first with 8 such carriers, Southern Region second with 18, Southwestern third with 7, Pacific fourth with 7, Mid-Western fifth with 4, New England sixth with 2, Northwestern seventh with 1, Central eighth with 10, and Middle Atlantic ninth with 2.

You will note that the three regions north of the Ohio and east of the Mississippi, the most heavily populated and highway-congested section of the country, are among the four lowest in long-haul carriers versus total amount of Class I trucking.

This group of 60 contains most of the interest for the financial analysts because it is the group where most of the publicly held companies are, where most of the merger activity seems to be going on, and contains the larger, more profitable companies, speaking in general terms.

At the present time there are eighteen trucking companies with publicly held stocks and reasonable marketability, or there were eighteen the last time I looked. Eight of these are in our long-haul group. Two more have over 500 mile average hauls, and only four of them are under the industry average of 300 miles: U. S. Truck Lines, which is a holding company for a large number of short-haul and cartage operations, headquartered here in Cleveland; Nor-

walk Truck Line, not very far from here, a unique combination of large volume and short haul not otherwise found outside the field of railroad auxiliaries; Overnite Transportation Co. of Richmond, Virginia, and Central Wisconsin Motor Transport Co.

In the last year 14 of these 60 long-haul carriers have been engaged in acquiring or leasing other lines, and another 10 of them were in process of selling out to or being leased by other long-haul carriers.

LONG-HAUL LINES ARE MORE PROFITABLE

The long-haul group lines are relatively more profitable. The entire 1156 had an operating ratio in 1955 of 96.4. The 60 long-haul carriers had an operating ratio of 95.6. 1955, however, was an unusual year in that there was a serious and expensive strike covering the eleven western states area, where much of the long-haul volume is, and the rest of the country was not bothered much more than usual with strikes that year.

In 1956, the 54 long-haul carriers for which figures are available show 94.6 compared to 95.7 in 1955. The short-haul group of which there were 914 with figures available, showed 96.8 in 1956 versus 96.4 in 1955. For the large group the ratio got worse by 0.4 point and for the long-haul group, it got better by 1.1 points. And the long-haul group showed an increase of 14.1% in operating revenue, compared to 7.8% for the larger group.

Those figures are averages with the usual limitations. There are some very good short-haul operations and some long-haul ones with bad results. Take Neil Curry, with his 127-mile average haul in California Cartage. In a year when the industry had to struggle to come out with a net after taxes equal to 10% on net worth, Neil came in with 25% or 30%, not only without batting an eye, but while bouncing around the country, acting as spokesman for the trucking industry, and doing the most effective work in that field that has ever been done.

But generally speaking the long-haul operation is more profitable. Why? First, it is bigger. These 60 averaged a gross of \$8,900,000 in 1955, nearly four times the average of the entire 1156. To be long-haul, they have to be bigger. They must have two or more terminals, not one. And obviously, to maintain a given number of departures per day, the longer the haul the more equipment it takes.

Bigger truck lines do tend to be more profitable. They have some handicaps. One is that little truck lines in bunches have more political power than one or two big ones, and in some parts of the country an inordinate share of the highway tax burden has been shifted to the few big interstate operators. It is also true that the big truck line has to spend money in controlling its operation that the little one does not have to spend.

On the other hand the big trucker can buy many things

cheaper, because of his large quantity purchases. His credit is better, and he is more able to buy the new, more efficient equipment. He can afford to hire higher-priced talent, both permanent and consulting, because he can spread the cost further. He can afford to spend \$25,000 to insure a correct decision about a \$2,000,000 investment in new equipment. If the small trucker can only use and afford \$50,000 of equipment, he obviously cannot afford the same research expenditure.

ANOTHER ADVANTAGE

Regardless of size, the long-haul trucker has another advantage. In a period when we have the kind of inflation we have been having for the past decade, caused as this inflation has been caused, wage-rates go up first and farthest. Prices of equipment, parts, fuel and rubber lag behind and do not go up as much.

The longer the haul, the lower the ratio of payroll to revenue, everything else being equal. Our long-haul group pays 40% of revenue for labor when the large group pays 48%. The larger amounts of labor are consumed at the two ends, not in the middle. Pickup and dock loading to linehaul, dock unloading from linehaul and delivery take a lot of labor, relatively. The actual movement of the freight takes less. So, with a given increase in the average level of wages and prices, the overall costs of the short-haul operator go up more than those of the long-haul operator.

Another factor moving in the same direction is that technological improvement in the trucking industry since World War II has been relatively much more in the linehaul operation than in terminal operation. In our own company, our newest trailers have twice the cubic capacity, per pound of tare weight, that we had in 1944. The tare weight has declined from 12,000 lbs. to 7,800 lbs. for an equivalent trailer. The allowable gross loads have increased, but not enough to permit the weight of payload to keep pace with the cube it can now occupy.

PICKUP DELIVERY

Dock handling of freight has gone from handtrucks to forklifts to towveyors or cable-cart systems, but the improvement has not kept pace with the change in linehaul efficiency. Pickup-delivery efficiency has improved little, aside from the installing of two-way radios. Office procedures have progressed to punched-cards and punched-tape and Transport Clearings, but that is a small portion of cost. Again the long-haul trucker, with his greater proportion of line-haul cost, has received the greater benefit.

Because of the emphasis on line-haul costs in the long-haul operation, the long-haul operator wants to haul a maximum amount of freight in a minimum number of line-haul miles. So he spends more to build better loads. His terminal costs per ton average 60% more than for the larger group. His average load carried, partly as a result, averages 20% heavier.

Another advantage he has is greater equipment utilization. He is getting nearly 60% more revenue per power unit employed than the larger group.

The typical average operation, a 300 mile haul, is an over-night haul. You pick it up in the afternoon, load it

out in the evening and deliver it in the morning. Obviously you cannot get over 300 miles in a day on a power unit, and your average will be well below that. And in a shorter haul operation it may be still lower. But in a really long-haul operation, with schedules equally spaced around the clock, you may average 440 miles per 24 hours or 160,000 miles a year, compared to the large group average of less than 60,000 miles. With such high utilization, capital charges and other time-basis costs are spread over many more miles.

The average hauls of special commodity carriers vary considerably from those of General Freight carriers. The auto haulers average a little more, 363 miles. The household goods people very much more, 682 miles. Petroleum or tank truck average hauls are very short—an 84 mile average.

TANKER OPERATION

While the tank truck operations are short haul, they deserve some mention here because they are to an increasing extent becoming affiliated with large general freight operations. P-I-E's tanker operation grossed nearly \$10 million last year and is the largest single tank-truck operation in the country. Consolidated Freightways has acquired substantial tanker operations. A large tanker operator, John Ruan, now controls the former Keeshin system.

The cost factors in tanker operations are quite different from general freight. You have no terminal investment. All you need are maintenance facilities, parking space and a wash-rack. The rates are higher on shorter hauls because of driver delays while filling and emptying the tanks, and lower equipment utilization. However, utilization is much better for these short hauls than you would expect in terms of general freight. It is both a day time and night time business. In many areas we now have "free access" arrangements with our tanker customers, whereby our driver has a key to the bulk distributing point, goes in perhaps in the middle of the night, loads his tank and delivers it to some other point where, perhaps, it is still too early for the place to be open for business.

The major difference in tanker operation is that it is almost entirely a one-way business. You go out full and come back empty. There are a few triangular movements, but not very many. Another difference is that you do business with a few large accounts. In our tanker operation, less than 30 shippers account for 75% of the revenue.

The tanker business, originally pretty much petroleum products, is diversifying into other fields, such as chemicals, tallow, and certain food products.

ECONOMIES IN MERGERS

Getting back to the long-haul general freight carriers, there have been a number of mergers of truck lines in recent years. In almost all cases a long-haul carrier has been buying either long-haul carriers or short-haul carriers. Why has this been going on, and what's good about it?

The shipper prefers single-line truck service that will take his freight all the way to destination, as compared to an interline movement involving 2 or 3 truck lines. Also, the good-sized shipper tends to give half or a little more of

his freight to one favored truck line, and to spread the rest among two or three or four others, as insurance. The favored truck line, other things being equal, will be the one that can handle more of his destinations for him, can take more of his freight going in different directions. For these reasons, we can truthfully say that much of the pressure for trucking mergers is coming from shippers. The major truck line that wants to stay competitive must be able to take the

freight in a lot of different directions and carry it a long distance.

As mentioned earlier, there are economies in mergers, which can be briefly summarized as: buying things cheaper in larger quantities, processing paperwork and performing certain other operations more cheaply in large quantities, and being able to spend more to arrive at better decisions because larger sums are involved.

The Short Haul Carrier

ALEX. K. SCHERER

President, Scherer Freight Lines, Inc.

I HAVE BEEN ASKED to tell you about the short haul trucking industry. To be sure, I cannot give you the glamorous and almost fascinating story that goes along with the history and development of such an outstanding company as Pacific Intermountain Express. It has been my pleasure to visit some of the P.I.E. installations and I always go away with the feeling that such a company has very definitely planned its way by successful steps into a smooth running, profitable company. True, the conditions under which they operate are perhaps more favorable, but I must say that P.I.E. has the so-called "know how" that many of us lack.

Perhaps now you will wonder why the two types of operations should differ.

The first point of difference is profit. The long haul carriers have proven to be far more profitable than the short haul group. I think the basic reason is the spread of the dollar available. It would appear that the cost of pickup and delivery by the two groups would be approximately the same. We pay the same for equipment, local labor, local taxes, terminals and the various costs involved in the assembling and distribution of shipments. There would appear therefor to be a distinct advantage in the costs which make up the line haul portion of the revenue. At this point let us pause to distinguish the difference in the miles which classify short haul as against long haul. I would consider a short haul carrier as any line which delivers freight overnight. This brings the distance up to about 400 miles as the dividing point, depending, of course, upon terrain and driving conditions. The cost of labor, per mile, to a carrier operating a haul of over 200 miles is the same as a longer haul. However, below 200 miles the labor costs increase sharply. For example, these carriers have minimum guarantees of 8 hours on certain runs which might only require actual time of 5 hours. They have minimum guarantees on what is known as multiple legs, where a driver would go from point A to point B, which might require only 2 hours, but would be paid for perhaps 3 hours. Thus, the long haul carrier receives a better break on the longer haul for the

similar labor service. This means ultimately that where a long haul carrier may allot 40% to his labor cost, it could rise as high as 60% of the short haul revenue.

THE LABOR CONTRACT

Three years ago a labor contract was signed, which in effect, by regions, might be considered as a national contract. I believe the greatest impact adversely came upon the short haul carrier, particularly one operating as a distribution carrier to small towns. The impact in the larger cities, such as Cleveland, Chicago, New York and St. Louis was one of a straight percentage increase and at what I would consider a normal, comparable increase with industry over a period of three years. Such was not the case with the short haul carrier. Where a carrier was paying a rate of \$1.75 per hour in a small town three years ago, the rate today is \$2.24. In addition, the fringe benefits added another 25c per hour. The hours were reduced from 48 to 40. This tremendous percentage increase has been too great for the short haul carrier to absorb, without corresponding increases in freight rates.

Next, the short haul carrier probably averages not more than 50,000 miles per year on line haul tractors on runs of less than 200 miles, and about 90,000 miles on runs of over 200 miles. I do not know what P.I.E. would average, but I should judge that a long haul carrier would average about 125,000 miles per year on a tractor. Similar percentages would exist on line haul trailers. You can readily understand that this comparison results in a much higher cost per mile for depreciation for the short haul carrier. It means that a long haul carrier can turn his equipment in quicker, getting the advantage of engineering advancements. Further, it stands to reason that a short haul carrier will operate in more congested areas so that the maintenance factor should be greater. Another important thing to consider at this point is the inflated capital replacement cost of the short haul carrier as against the long haul carrier, the latter again taking advantage of a faster depreciation because of greater mileages and quicker replacement.

Another serious problem facing motor carriers is reciprocity between states. Here the situation favors the short haul carrier. Every state requires a truck to carry a license plate similar to the requirement of a passenger car. There is a tremendous variation in cost. In Illinois, for example, the cost of licensing a tractor carrying the standard average load is \$894.00. In our neighboring state of Indiana the cost is approximately \$350.00 for the same unit. In Wisconsin it is approximately \$700.00 and in Michigan approximately \$450.00. In addition, the Illinois carrier pays the usual property tax and other customary taxes. The problem becomes aggravated in the case of a multi-state operator where complete reciprocity is not granted. Our own company is in a very unusual and peculiar position as an Illinois corporation. As such, every tractor operating in Illinois is required to carry an Illinois license plate, even though it may be domiciled in Wisconsin or Missouri. You can readily see the impractical side of such a situation where dual licensing results.

The short haul carrier is not confronted with licensing and use, taxes to as great a degree as the long, multi-state operator. This problem, while not grave, does represent a confused outlook unless a standard form of reciprocity results. The motor carriers realize the problem and feel that an equitable adjustment of license fees on a pro rated basis between the states involved is a possible solution, and to me it makes sense. However, such does not often meet the approval of the state involved. Whether ultimately the Federal Government will be forced to enter into the situation is questionable. A carrier operating in only one state or a few states has a much lesser problem than the multi-state operator.

I might add that there is a wide divergence of opinion existing between the motor carriers themselves, particularly the one-state operator who feels he is subsidizing the multi-state operator. On this latter point I very definitely feel that such a view is short sighted, as the long haul carrier is just as essential to the overall outlook as the single state operator. From an overall standpoint one is dependent on the other for adequate revenues for highway construction and maintenance.

Just a brief comment on gas tax diversion. Very definitely, every person should be interested in seeing that monies collected for gas taxes should be used only for the specific purpose of highway construction, maintenance and costs pertaining to highways. Otherwise, with the tremendous sums being collected continued pressure can be expected for diversion of these funds for other purposes.

THE SHORT HAUL CARRIER AS THE WORK HORSE

So far I have pictured to you the disadvantages of the short haul carrier. We must recognize, however, that the short haul carrier is the older of the two. It is the real work horse of the team. It is the final link of distribution, particularly to the small cities and villages, and particularly the

rural area. It is the feeder to the longer haul carrier. It is highly vulnerable to the possibility of a private carrier, which would be the use of trucks by a company to haul its own products, and believe me, there are many which do so today. On the other hand, the short haul carrier is far less vulnerable to other forms of competition, such as the railroads and airlines. On this phase you might question the effect of the highly publicized "piggy-back" competition. So far we have not found this rail phase of competition to be a factor against the short haul carrier. The short haul carrier is flexible and adaptable to short notice changes of dispatching and routing. Traffic congestion in the future will become less as highway planning is improved. Greater tonnage will be available in the future as our population constantly increases. So I say that while the picture today is not as rosy for the short haul carrier, I am certain that the future will be brighter as the days go forward.

FINANCING SHORT HAUL CARRIERS

You are concerned primarily with finance. I have up to now given you a quick view of the short haul segment of our industry. We of this group need help. Our primary source of financing comes from the local banks and the manufacturers. As the Federal Reserve tightened so did our sources of financing. I know of only three short haul carriers which are publicly financed. I think there is a great field for public financing in the short haul segment. Public financing would relieve the lack of working capital. Too many of us have our money in fine terminals, but brick and mortar do not help us today. Interest payments are extremely high, in some cases representing as high as 25% of the gross profit of a carrier having an operating ratio of .95. Interest is being paid at rates from $4\frac{1}{2}\%$ to $6\frac{1}{2}\%$ for equipment and terminals. I would say that the average age of the owners of closed corporation short carriers would be 55 years. These men are now faced with inheritance tax problems as many lack corporation insurance to protect themselves. These men would prefer to step out now and see the business publicly financed. Another field would be the consolidation of many competing carriers over duplicating routes where tremendous savings could be accomplished by cutbacks in duplicating operating expenses. There are too many short haul carriers today serving the same points, in contrast to the situation of the long haul carrier. Public financing would attract better personnel to these short haul carriers, who in turn could bring about a better profit picture through better management techniques. Stronger short haul carriers adequately financed and better staffed by better salesmen, better maintenance personnel, better equipment, better facilities, better communications and better planning could almost immediately reverse the outlook and bring a promise of a bright and profitable picture of a well stabilized, secure industry.

Thank you for your interest, and I hope that out of my remarks may come the possibility and interest of public financing in the short haul field.



How Glidden is growing with the rise in building materials sales!

Through new and better products that help make home improvement and modernization easier and lower in cost, Glidden has become an integral, growing part of the expanding building materials industry.

Soybean derivatives, developed by the Glidden Chemurgy Division, go into coatings for insulation board as well as nearly all the washable wallpaper produced in the United States. And they are used in many other ways from indoor plywood to floor coverings and paint.

The Glidden Chemicals-Pigments-Metals Division is a leading supplier of white and colored pigments to the makers of products such as plastics, oilcloth, wallboard, acoustical tile and even draperies and fabrics.

Manufacturers of rubber, plastics, paper, asphalt tile, protective coatings and numerous other products come to the Southern Chemical Division for ingredients derived from the pine tree.

There is a Glidden paint to beautify and protect every surface inside or out. Stains and varnishes for furniture, gleaming enamels for appliances and kitchen cabinets—all are made by Glidden.

So Glidden is growing with the rapidly expanding needs of the building materials industry. And this is typical of the way Glidden grows—through helping improve products, develop new ones or reduce costs for the growth industries Glidden serves. The Glidden Company, Cleveland 14, Ohio.



CHEMURGY

Soybean Derivatives;
Grain Merchandising

DURKEE FAMOUS FOODS

For Food Processors;
Restaurants; Consumers

SOUTHERN CHEMICAL

Naval Stores;
Terpene Chemicals; Resins

PAINT

For Consumers; Product Finishes;
Industrial Maintenance; All Surfaces

CHEMICALS-PIGMENTS-METALS

Pigments and Metal Powders
for Industry

MIDLAND STEEL—GLIDDEN CONFERENCES

Midland Steel Products Company

Wade N. Harris, President: May I at the outset extend to one and all a most sincere welcome to Cleveland, and more particularly to our meeting this morning? I must confess that I feel somewhat awed in addressing a group of specialists such as yourselves in that this is our premier performance, so to speak. However, you all have very kind faces, so I feel certain you will overlook any shortcomings our presentation might have.

Permit me first to give you a short history of the Midland Steel Products Co. The company and its predecessor companies are over 50 years old, Midland being formed by a merger of the Parish Manufacturing Co. and the Detroit Pressed Steel Co., both of Detroit, and the Parish and Birmingham Company of Cleveland in the early 1920's. Midland has been engaged almost exclusively in the manufacture of parts for the automotive industry for this entire period. We are not a steel company, as many would have us be because of our corporate title. Our major products are chassis frames for trucks and passenger cars. However, in addition, we do manufacture air and vacuum brakes and air controls for the truck-trailer industry, as well as for power shovels, buses, etc. This constitutes about 15% of our total volume, and in our opinion has excellent growth possibilities. Our major customers include Buick, General Motors Truck, Ford Truck, Lincoln, Plymouth, Dodge (both passenger cars and trucks), Studebaker (both passenger cars and trucks), Willys, Fruehauf, White Motor, and many others.

We operate three plants, located in Cleveland, Ohio; Detroit, Michigan, and Owosso, Michigan. Our Cleveland and Detroit divisions primarily manufacture chassis frames. Our Owosso division produces power brakes and air controls.

So much for our company's historical picture. Now let us discuss the present and the future, and in doing so I will try to anticipate some of the things we are doing or plan to do in which you, in your field, will have an interest.

DIVERSIFICATION PROGRAM

Midland's management has given considerable study and thought to the pros and cons of diversifying. We have concluded that a company cannot stand still—it either goes forward or backwards, and we are committed to a program of growth. After considerable study of the potential of present products, we have concluded that although the automotive industry will most certainly continue to grow and that we likewise should grow with it, we must in addition to this find other businesses or products. We have

also come to the decision that our objective of diversification can best be reached by acquisition rather than by development of new products, although we are certainly not neglecting this area insofar as existing products are concerned. We are spending considerable time and money on improving and broadening our product line, particularly in our power equipment operations.

During the past 18 months we have devoted considerable time to the problem of acquiring other companies. We have looked at many. We have been extremely careful and critical in looking at other businesses because we do not want to make acquisitions that will dilute the interest of our stockholders. Mergers have become quite a fad in recent years, but, as you know better than I, some of them have not been sound. For this reason we would rather not make any acquisitions unless and until we can see rather positively that they are going to help the future growth of Midland. We are not interested in just building up volume for the sake of being big. We have established a rough rule of thumb measurement of the type of companies we are looking for, and that is a business with a net worth of between \$5 and \$15 million, engaged in the manufacture of industrial products. We are not interested in anything in the consumer field, because it is too unrelated to our present type of business. We are prepared to finance any merger or acquisition we might make through either an exchange of stock, cash, or practically any type of securities. In other words, we are quite flexible as to the method of financing when that becomes necessary. At this time we have nothing specific to announce regarding our efforts to diversify, although at present I can tell you that we have advanced to at least the talking stage or beyond with several companies. Whether anything happens or not remains to be seen.

DECENTRALIZATION ESSENTIAL

Another program we recently undertook was the decentralization of our management organization. It became obvious to us that if we were going to diversify and operate unrelated businesses in different geographic locations, decentralization was desirable if not essential. During the past year we have changed our organization to a completely decentralized type. Each division is a self-contained organization and has full responsibility for the profits and results of that division. We feel that although there are objections to decentralization, these objections are more than offset by certain advantages. The major one that we see is the opportunity it offers to develop management, and to

define responsibility and authority more clearly. The results of our program in this area to date have been most encouraging to our entire organization. Incidentally, the changes we have made have also enabled us to prepare in a planned fashion for the retirements of several key officers in the near future. William A. McKinley, chairman of our board; Roy Fralick, sales vice president; and Einar Almdale, manufacturing vice president—all reach retirement age within the next twenty-four months. When they retire, it is our belief that our new division heads and staff officers, with the benefit of the advice and counsel of these veterans, will be well qualified to take over.

During the past two years we have made substantial investments in capital improvements, the major one of which was the expenditure of approximately \$3 million dollars to build and equip a modern plant in Owosso, Michigan, to house our power equipment division. This plant has been operating approximately a year with favorable results. We feel that the move was a sound one, and as previously mentioned, we believe that there are splendid growth possibilities in the power equipment field. Another major capital expenditure was the purchase of about \$1 million of equipment for our Cleveland division that permits us to buy steel in coils, and eliminate the pickling operation by the introduction of shot blast. This equipment is an automatic line of decoiling, shot blasting, and shearing sheets to size, and will result in a substantial saving in steel processing costs. Approximately another \$2 million has been invested in new presses, automatic feeding of presses, and related equipment for all plants. I might add that our office procedures and methods have not been overlooked insofar as mechanization and the like is concerned. Much has been done, and we are still working at it. It is a never ending job, as you all know. You are never fully up-to-date—such is progress.

Now may I touch on a personal "gripe" of mine. I get concerned with the publicity that is constantly being given to the risk of being an automotive parts supplier. I have had considerable experience in this industry, in addition to many other industries, and I have concluded that there is no more risk as an automobile parts supplier than there is in most, if not all, other businesses. The automobile industry represents one of the most vital segments of our industrial economy, and based on the best combined judgment of economists, it is estimated that by 1960 the annual passenger car rate of production will be $8\frac{1}{2}$ million cars—by 1965, 10 million is a strong possibility. We have been a parts supplier for 50 years, and during this time we have never lost money and have never had to borrow money. There are very few companies in any industry that can boast of that record—a record that would certainly not indicate that there has been any abnormal condition in the parts supplier business. We feel that the risk in any business is one of failing to maintain a healthy management. It is people that make the success of a business, and it is for that reason that we have emphasized the building of a good management team. We are continuing to give greater emphasis to that program. We are not complacent or self-satisfied, I can assure you. We recognize the risk that is inherent in almost any business and the importance of flexibility. We hope to be able to move with the times.

Now for another item in which I believe you in your field have an interest. There has been considerable publicity in newspapers, trade magazines, and the like, on unitized construction. I would like to tell you that, first of all, unitized construction is not new; it is many years old. The only manufacturers who have gone to unitized construction are American Motors, Willys in a car that was later discontinued, Hudson, and some foreign cars. The major producers of automobiles in this country have studied it for many years and have thus far concluded that there is no advantage to the unitized construction over the current method of building a car with a frame and body. Of course, this conclusion on their part is always subject to change with the changing times. We at Midland are alert to that possibility. If this should happen, we have plans to shift our product from one to another. This has been going on so long as companies have been doing business, shifting product lines and product. With a good management organization and sound financing, this can be done effectively and without adverse effect to shareholders.

In concluding my remarks I would like to make this observation with no offense intended. Naturally, we at Midland, along with our shareholders, are concerned about the market for our stock. We become disturbed when we read analyses prepared by investment counselors and others pointing out that Midland does not have future growth and is a risk investment because it is in the parts supplier business, and also because we have an 8% non-callable preferred stock. One reason for this is because of the handful of companies in the automotive parts industry that have failed. However, if a careful analysis were made of these failures, it would appear that they did not necessarily fail because they were automotive parts suppliers, but rather because they did not maintain an alert, aggressive management team. It is conceivable that they would have failed in any industry. All industries have companies that have failed to maintain a healthy organization and an alert management. This has resulted in their lagging behind or dropping out completely.

Now as to our 8% preferred stock. It is of long standing. Our common stock dividend record based on the current market of stock has given an equal return on investment. We realize that the 8% non-callable preferred is not a common type of issue, and consequently some of the investment people feel that it is an unorthodox stock. Study has been given to this problem, and we do have ideas for a solution which we believe would be to the best interest of all Midland shareholders. However, at this time we are not in a position to review our thoughts on the subject. In any event, it is unlikely that whatever is done will change our dividend requirements, which actually in today's market are not too far out of line.

May I summarize by telling you that we at Midland are optimistic about our future, primarily because we have been able to build an alert, capable, young management organization and they have the tools to work with in the form of a good, sound, well-financed company. Our future plans call for further emphasis on maintaining good management. As long as we are able to do so, we feel there is

little doubt as to our continued progress. Good people go a long way toward making a company because in the final analysis it is they who develop the new products and perform the many other vital functions that chart the course of any company's future.

We are very happy to have this opportunity to talk to you a little about Midland and to give you our views.

W. E. Hornig, Treasurer: My part in this program is to give you the high spots of our financial condition and earnings, both present and future, with a minimum of detail.

Very little is to be said about our past, as this is pretty much in the record. You have received a package containing a brochure, our annual report for 1956, together with our statement of earnings for the first quarter of 1957. The brochure gives you a rather good story of Midland, both past and present, so I will leave that for you to read at your leisure. As disclosed in our annual report, our financial condition continues to be excellent, and our balance sheet at December 31, 1956, is very clean, and I am sure you gentlemen can draw your own conclusions from our statement. We had no funded debt, and had a working capital of about \$20 million with a current ratio of 3 to 1. There has been no appreciable change in our balance sheet to April 30, 1957, except that the proceeds of the \$3 million in government bonds that matured in March, 1957, were used in part to pay the March 15th installment of about \$1 million on our 1956 income tax, and the balance is being retained to strengthen our cash position. Inventories reached a peak of \$15 million at March 30, 1957, and were reduced to \$14 million at the end of April. We expect a slow but steady reduction in inventory with a corresponding increase in cash until this fall, when we stock up on material for the 1958 model automobiles. I do not anticipate any need for additional financing until we make an acquisition of another company or effect a merger under our present diversification program.

Our earnings for 1956 declined 35% from our 1955 earnings, although sales were only down about 10%. Mr. Harris in his letter to shareholders attributed the decline in earnings not only to sales volume, but also to certain substantial non-recurring costs. I will take just a moment to elaborate on these items to give you a better understanding of them and to give you their effect on our 1957 operations.

First, the expense and start-up losses resulting from the transfer of our Power Brake Division to our new plant at Owosso, Michigan. Operations of the Power Brake division at the Detroit plant were substantially curtailed in December of 1955, and we started to move inventory and equipment early in 1956. Some of the operations at Owosso were started about two months later, and it was not until about the middle of 1956 that operations were pretty well along the way. The actual cost of moving and the loss to be sustained in the demolition of our old building were provided for in 1955 by an after-tax provision of \$500,000. The loss sustained in the first quarter of 1956 was due primarily to start-up costs, including the training of new personnel. I am happy to state that in the first quarter of 1957 this division operated substantially in the black, and we are very optimistic as to the future of this division.

The second item was a very costly rearrangement of our production and assembly lines in 1956 for the production of the 1957 model frames at both the Cleveland and Detroit frame plants. The customer pays us directly for the tools and dies involved in a model changeover, but the cost of rearranging the assembly lines is our expense; however, we do include a factor in the selling price of the frame to take care of this cost. It has always been our policy to absorb this cost in the year in which incurred, although I admit that some of this expense could logically be deferred to the following year. Normally, however, this is not a substantial item and does not affect our earnings from one year to the other, except that the frames for the 1957 model cars were considerably changed, being much heavier and larger, and the rearrangement costs were very high. However, we did follow our established procedure of taking these costs into our expenses in 1956. The line changeover required for the 1958 model frame is very small, so this item should help our 1957 earnings show an improvement over 1956.

Third, in 1956 we adopted the LIFO principle of computing inventory, and the gross write-down amounted to a little over \$1 million, which resulted in a net after tax reduction of our earnings of \$483,842. This, of course, can affect our 1957 earnings, should we have still further steel price increases this year; however, from the information we have available, we do not anticipate that the steel price increases in 1957 will be as great as they were in 1956.

Included for the first time in our 1956 annual statement is a ten-year comparison of financial results. I can appreciate that this report is purely statistical and is self-explanatory, but I would like to highlight a few of the figures:

During this ten year period our net profit amounted to \$43.7 million and we paid out dividends of approximately 62% of our earnings, which amounted to \$27 million. Our capital expenditures during this period were \$15.6 million, of which depreciation and amortization only provided \$7.4 million, and the remainder of \$8.2 million had to come out of our net earnings after taxes. This is probably an old story to you, that depreciation is providing only about half the funds required for capital additions and improvements. Therefore, to help overcome this, we have in 1956 made the following changes in our accounting policies, but I agree that this is not a cure-all for the problem. For income tax purposes we adopted the declining balance method of computing depreciation. We have always been conservative and taken more depreciation on our books than has been allowed for taxes, and this method will tend to equalize the two. Secondly, we adopted the LIFO principle for most of our inventory, the results of which have been previously given to you. We have no extensive capital expenditure program for 1957, but do expect to spend close to a million dollars on replacement and modernization of machinery and equipment.

Sales and earnings for the first quarter of 1957 were well ahead of the same period for 1956. The increase in earnings is due not only to the increase in sales, but also to the improvement in the profits of our Power Brake division at Owosso, Michigan, as previously mentioned. In his letter to shareholders, Mr. Harris stated, "All indications are that the second quarter will continue at about the same level as the

first quarter." As of this morning, I believe I can safely confirm his statement.

And now for a look at the balance of the year. As an automotive parts supplier, we naturally follow the ups and downs of the automotive industry. Experience has taught us, however, sometimes to temper the often ultra-optimistic predictions of the Big Three as to their short-range future.

If the third quarter follows its usual pattern, and I see no reason why it should not, both sales and earnings will be well below the highs of the first two quarters, due to shut-downs for model changeovers, customers waiting for new models to come out, etc. With the introduction of the 1958 models in the fourth quarter, we can look forward to a good quarter to bring our sales for the year to about \$80 million and a net profit of about \$6.50 to \$7.00 per share of common stock.

For many years it has been our policy to pay regular quarterly dividends of 75c per share on the common stock, equal to \$3.00 per share annually. It has also been our policy to pay an extra dividend if the earnings for the year justify such action. This determination is usually made around the first of December, at which time our earnings for the year can be reasonably ascertained. If you will refer again to the ten year report, you will note that dividends paid on our common stock over the past ten years have averaged \$3.90 per share.

C. W. Elliott, Vice President, Industrial and Public Relations: I will confine my comments to supplying you with just a few facts concerning our industrial relations activities at Midland.

Our normal employment is approximately 5,000 distributed as follows:

- 450 Employees - Owosso
- 2,200 Employees - Cleveland
- 2,350 Employees - Detroit

At present we are operating with about 4,500 people because of reduced activity at Cleveland.

Of the total employment, over 1,300 of our group have 20 years or more of service with about 300 having over 30 years of uninterrupted employment with Midland. That is quite a record. We have some 300 management people in the company including about 50 in our engineering group.

The production and maintenance employees in our Detroit and Cleveland divisions are organized and represented by the UAW-CIO. There are separate units for each and contract negotiations are not company wide but rather on a local basis. The production and maintenance group in the Owosso division is not organized at the present time, although a UAW-CIO petition for an election is now before the National Labor Relations Board. We also have small clerical and technical employee bargaining units at Detroit represented by the UAW-CIO.

Our labor contracts run well into 1958. They pretty much follow the pattern of our industry and the automotive industry. The provisions of our agreements, including the so-called economic clauses such as wage rates, pensions, group insurance, etc. are comparable to those in these industries. In other words, from a direct and indirect wage point of view, we are definitely competitive.

Our labor relations picture at Midland can probably be best described as satisfactory. In the years gone by, our company has had its share of problems in that area, but the situation has materially improved in the past few years. Although I do not believe that we are about to be chosen as a case of example for a study of the utopia in labor-management relations, neither do I think we will be written up as the horrible example.

Our employees, generally speaking, recognize the competitive nature of our business and the importance of keeping our customers supplied and although we have our differences, they are generally resolved amicably. It is our objective to continue to do our very best to further improve company and union relationships through sound, thought-through policies and programs and a well informed, alert and efficient group. We are moving in that direction at present.

Now just a few words about some of the things we are doing at Midland in the field of management. We are now putting all of our policies and procedures in writing and making this information available to our management people. We are in the initial stages of a personnel development program. Without going into detail, this program will be geared to building from within by selecting and training our own people, not only to enable them to do a better job on present assignments, but also to move ahead with the opportunities. We are setting up what we hope will be a sound compensation program for all of our salaried people. This is something that some organizations have and others do not. We are now in the latter category, but within the very near future, will be in the former.

I could go on and enumerate many other new programs we have established at Midland, but I will not take your time for that purpose. We are, in my opinion, moving ahead nicely. We are avoiding getting in over our heads by starting things we cannot complete. With what I know and have seen of the Midland organization in my few months of service, they will finish whatever they start, and do it well. They are a grand bunch of people.

In conclusion, I want you to know that just as we are emphasizing new programs for internal application, we are doing likewise externally. We are trying to do a better job of keeping our shareholders and the general public informed about Midland. Just about 12 months ago we started the publication and distribution of quarterly statements. Not a new idea of course, but one that had not been previously followed by our company. We made a real effort in our 1956 annual report to tell our shareholders more about our physical as well as financial operations.

We invite questions, suggestions, and comments from shareholders and we get quite a few—the majority of which are favorable (thank goodness). We are maintaining continuing contacts with the press, etc. All of this is designed, not with the thought in mind of "grabbing the headlines" so to speak, but rather to do the things we honestly believe represent the responsibility we have to our shareholders and the public. Over and above that is the fact that all of us in the company know Midland is a good "outfit" and we want to share this knowledge with the world.

The Glidden Company

Dwight P. Joyce, Chairman and President: The people who comprise The Glidden Company are confidently looking forward to the future. Over the past several years many changes have taken place in the complexion of our company—all designed to provide a more stable and growing source of income.

During the five-year period 1953-1957 we will have invested over \$48,000,000 in new plant and equipment. Most of these capital additions, encompassing titanium dioxide, terpene chemicals, tall oil and grain elevators, occurred late in this period and have yet to add significantly to earnings. We expect to continue this expansion program. Our present plans indicate that total capital expenditures will be about \$45,000,000 from 1958 through 1962.

In addition to capital expansion, we have taken a number of steps to tighten and strengthen our organization through the elimination of products and facilities which were either alien to our basic plans, no longer economically justifiable or static with little or no potential for future growth. This reorganization program has freed over \$12,000,000 in assets for more profitable employment elsewhere and has eliminated a total of \$780,000 net loss from these operations.

PAINT DIVISION

Over the past five years, Paint division profits have ranged between 35% and 45% of total, with an average of 38%. Since 1945, Glidden domestic paint sales have increased 155%, compared with an industry increase of 121%.

An even more rapid growth is anticipated as the result of an expanding distribution system and a continuing flow of new and improved products.

In 1954 we adopted a master plan for branch development. At that time we had 43 wholesale-retail branches in the United States and Canada. The initial phase of this plan calls for the establishment of 60 additional branches by 1959. This first step is being taken to cover the large areas of major distribution. Branches provide greater intensity of ultimate retail distribution through better coverage of and service to dealers, painters and maintenance accounts. We now have 78 of these units in operation, and initial results of the newer branches have proven the wisdom of this plan. The next stage, to come in the 1960's, calls for the development of 200 to 300 smaller branches within these major areas to serve the painter-maintenance and consumer markets.

The most important development on the product side lies in the field of industrial emulsions. Emulsion finishes do not contain combustible solvents and are less hazardous in application. They also speed up the application and drying time required, thus reducing finishing costs. We have recently been able to overcome many obstacles to the use of emulsion coatings on metal, and preliminary markets tests indicate extensive interest, particularly in the automotive field.

Our Durkee division is in the process of realignment

following three reorganizational steps adopted within the past six months.

The vegetable oil refinery at Elmhurst, Long Island, has been closed and its production transferred to Louisville and Chicago. We are now upgrading the former Elmhurst product line and eliminating marginal business previously carried for volume purposes only.

All table margarine and salad products operations east of the Rocky Mountains have been sold, so that we may concentrate on developing our important edible oil business.

Plans have been made to move the coconut and condiment operations now at Elmhurst to leased property in Bethlehem, Pennsylvania. This move will require an investment of \$500,000 in new processing and packaging equipment to reduce manufacturing costs.

Over the past five years, Durkee has provided 22% of total company profits. These three steps are calculated to provide a minimum of 20 cents per share additional earnings in 1958.

CHEMICALS-PIGMENTS-METALS DIVISION

Thirty-seven per cent of our 1953-1957 capital expenditures have been in this division—primarily for titanium dioxide. In 1951 we had 5% of the 282,000-ton annual industry capacity. By 1959 we expect industry capacity to be in excess of 500,000 tons. Of this we will have about 11%. This expansion is scheduled for completion late in 1958 at a total cost of \$30,000,000.

Due to lack of capacity, we have not really dented the paper, plastics and ceramics markets for titanium dioxide. While there may be periods of temporary overcapacity, the future prospects are bright.

SOUTHERN CHEMICAL DIVISION

The expansion of our former naval stores operation has been in two directions—tall oil and terpene chemicals.

We have just completed a \$3,500,000 tall oil plant which will provide us with a low-cost source of rosin and fatty acids to upgrade for the protective coating, paper and chemical industries.

We have been gradually increasing our productive capacity for terpene chemicals and this past year have invested \$600,000 in new facilities. These additions coupled with tall oil will add at least 20 to 25 cents per share to our earnings over the next several years.

Further expansion lies ahead. Basic research in this field led to the discovery that inexpensive terpene hydrocarbons could be converted to valuable fine inorganic chemicals. We are now completing plans for the construction of facilities to synthesize menthol and certain constituents of spearmint oil and other natural oils which will open up new markets for flavoring and perfumery ingredients.

CHEMURGY DIVISION

To eliminate our dependence upon basic soybean processing margins as a source of income, we are moving into grain merchandising and soybean derivatives in our Chemurgy division.

Glidden has pioneered the development of chemically isolated soybean protein. While new industrial products and uses are being developed, the largest potential falls within the edible field. In the near future we will start construction of a plant to produce edible protein.

ADDITIONAL SOURCE OF MATERIALS

Promine, our tradename for this product, is entirely new. There are no other natural or synthetic proteins which have comparable chemical or physical properties and cost advantages. While having high nutritional values, its uses as a coating, thickening and gelling agent are just as important. It is not intended for food-type products, but will

be used to improve the quality of many existing food products.

The key to our grain merchandising operation is a new 6,500,000-bushel terminal elevator located on the Calumet River, in Chicago. Put into operation late last year, its \$6,000,000 cost is being amortized over a five-year period. As a result, this investment will not contribute to earnings until 1962, but it will provide our processing operations with an additional source of supply for their basic raw materials.

I think you will see that we are not standing still. Every effort is being made to obtain maximum utilization of both management and capital.

SOUTHERN NATURAL GAS COMPANY

Birmingham, Alabama

Common Stock Dividend No. 73

A regular quarterly dividend of 50 cents per share has been declared on the Common Stock of Southern Natural Gas Company, payable June 13, 1957 to stockholders of record at the close of business on May 31, 1957.

H. D. McHENRY,
Vice President and Secretary.

Dated: May 11, 1957.



THE FLINTKOTE COMPANY

New York 20, N. Y.

QUARTERLY DIVIDENDS

have been declared as follows:

Common Stock*

sixty cents (\$.60) per share

\$4 Cumulative Preferred Stock
one dollar (\$1) per share

Both dividends are payable June 15, 1957 to stockholders of record at the close of business May 31, 1957.

WILLIAM FEICK, JR., Treasurer

May 1, 1957

*115th consecutive dividend

ALLEGHENY LUDLUM STEEL CORPORATION

PITTSBURGH, PENNA.



At a meeting of the Board of Directors of Allegheny Ludlum Steel Corporation held today, May 16, 1957, a dividend of fifty cents (\$.50) per share was declared on the Common Stock of the Corporation, payable June 29, 1957, to Common Stockholders of record at the close of business on June 7, 1957.

S. A. McCASKEY, JR.
Secretary

Public Service Electric and Gas Company

NEWARK, N. J.



QUARTERLY DIVIDENDS

The Board of Directors has declared the following dividends for the quarter ending June 30, 1957:

Class of Stock	Dividend Per Share
4.05% Cumulative Preferred . . .	\$1.02
4.15% Cumulative Preferred . . .	1.015
4.30% Cumulative Preferred . . .	1.075
\$1.40 Dividend Preference35
Common45

All dividends are payable on or before June 29, 1957 to stockholders of record May 31, 1957.

F. MILTON LUDLOW
Secretary

Harbison-Walker Refractories Company

Board of Directors has declared for quarter ending June 30, 1957, DIVIDEND of ONE and ONE-HALF (1½%) PER CENT or \$1.50 per share on PREFERRED STOCK, payable July 20, 1957, to shareholders of record July 5, 1957.

Also declared a DIVIDEND of 45c per share on COMMON STOCK outstanding at May 2, 1957, and on the additional shares to be issued May 21, 1957, to effect the 2 for 1 COMMON STOCK split, payable June 1, 1957, to shareholders of record May 2, 1957.

G. F. Cronmiller, Jr.
Vice President and Secretary
Pittsburgh, April 25, 1957.

GOOD YEAR

DIVIDEND NOTICE

The Board of Directors today declared the following dividend:

60 cents per share on the Common Stock, payable September 16, 1957 to stockholders of record at the close of business August 15, 1957.

The Goodyear Tire & Rubber Co.
By Arden E. Firestone,
Secretary

June 3, 1957

THE GREATEST NAME IN RUBBER

SELECTED MANAGEMENT CONFERENCES

Union Bag-Camp Looks at the Coming Age of Paper and Wood

DONALD J. HARDENBROOK

Vice President and Director, Union Bag-Camp Paper Corporation

FUTURE PLANNING, as you all know, is by no means a new function for industrial companies. However, today's economic and political complexities have served to stimulate and broaden activities in this field so that industry can more effectively cope with the problems in the world of tomorrow.

Union's long-term planning is carried on by a department under the direction of an executive vice president. Its principle functions are to analyze the economic forces that could affect our business future and to study the various segments of the pulp and paper industry with the object of determining profitable avenues of expansion and diversification.

Management is assisted in this important work by outside consulting firms in the fields of marketing, engineering, economics and research. The studies and reports of these consultants serve to supplement managements' practical experience and knowledge, as they have the value of the outside scientific perspective.

The paper industry in the past half century has shown a remarkable rate of growth that has persisted up to the present time. Excluding the many relatively new products which did not exist at the beginning of the 20th century such as television sets, synthetic fibres, miracle drugs, air conditioning units, etc., the growth trend of paper compares most favorably with other major products and has shown a greater increase than industry generally. In more recent years, it has ranked with the top industrial growth leaders.

Any long-term conservative appraisal of paper consumption indicates very little diminution of the vigorous and dynamic growth trend of the industry. In fact, there may well be an acceleration of development of new forest product uses as a result of advancing technology and the remarkable versatility of the tree. In the years ahead, it seems inevitable that the enormous untapped frontiers of wood utilization will bring wider product diversification to the integrated pulp and paper mill with large timberland reserves.

Already great strides have been made through wood conversion into products such as animal fodder, gas, alcohol, houses, yeast, gasoline, benzol, butadiene, explosives, heavy

motor oil, sugar, charcoal, paints, varnishes, soap, plastics, food, intoxicating beverages, wall board, fibre board, tannins, tars, vanillin, sulfa drugs, insecticides, cellophane, vitamins, sex hormones, syrup, medicines, furniture, construction materials, plywoods and paper, the most valuable material ever processed by man. Some of these products are better known in Europe and were developed during World War II. Hitler's "Thousand-Year Reich" was to have been the "Age of Wood" and wood was given the surname. UNIVERSALROHSTOFF, i.e., the material which can produce anything.

Fifty years ago, many of the present conversions of the tree were unknown. In less time from now, technology and industrial foresight will have produced new wonders in products and wood utilization that will transcend anything developed in the past, with the possible exception of paper.

In the second century B.C., a Chinese made the first paper from what is believed to have been mulberry bark, bamboo and old fish nets. Not so long ago after that, cotton and linen rags became the most commonly used raw material and remained so for nearly two thousand years. Then in the middle of the 19th century came a great though simple discovery. A German artisan, by the name of Friedrich Gottlob Keller, produced the first mechanical wood pulp. He held blocks of wood against a grindstone. This action separated the fibres so that he could form them into a felted sheet. Thus was born the first *wooden paper*. A few years later, there began one of the most spectacular of all industrial expansions through the discovery of the *chemical* conversion of wood into pulp.

To civilization this was equally as significant as the invention of movable type. By 1875 wood pulp production had only advanced to a few thousand tons but then it went forward with a rush. Twenty years later the million-ton mark was passed and in 1956 the world output totaled fifty-five million tons, a 5,400% increase in a little more than half a century.

In this day and age, paper is used on a truly broad scale in only three ways: for containers and packaging, for a writing or printing surface and as an aid to cleanliness and sanitation. With the development of technology, there is no reason why a huge volume of paper should not be used

in the construction field or in the garment industry. The new products may be made from paper alone, or may be composed of paper in combination with other materials like spun glass and plastics.

In tomorrow's world, there will be compelling economic reasons for houses made from paperboard. As the vast populations of low living standard countries attain higher levels of existence, better housing will be in the forefront of their pressing demands.

Paperboard houses may be the logical solution to their housing requirements since paper is the most economical way to use wood that we know of. Today such a prediction would naturally be received with skepticism, but it should be realized that experiments with paper houses have been going on for some time. Even as far back as 1878, at the Exposition of the Paper Trade in Berlin, Germany, there was displayed a house with walls, roof, carpets, furniture and picture frames—all made from paper.

The Forest Products Laboratories at Appleton, Wisconsin, have been carrying research in this type of building construction for many years. The Armed Forces for four or five years have been working on paper housing and have exhibited prototypes which would be almost as light as canvass, but as satisfactory for continued use as barracks constructed from lumber.

Union Bag in recent years has been operating an experimental pilot plant for the manufacture of paper honeycomb—a material which is considered to be the strongest known on a weight-strength basis ratio. I believe that in time paper honeycomb will have a legion of uses in the construction and packaging fields. Presently, it is being used in limited quantities in the making of panels, doors, partitions, roofs, walls, plus a wide variety of furniture and packaging uses. In the decades ahead, paper honeycomb may possibly develop into a big industry within a great industry.

Increasingly, paper is playing an important role in the construction features of modern dwellings. The use of wall-paper for interiors and sheathing paper for roofs and side-walls is common knowledge. Additional uses for paper are the outer services of plasterboard in dry-wall construction and paper waterproof barriers under slab foundations. Paper is the basis for reflective insulating material and batting. It is also the base for plastic laminated surface material such as formica. Electrical paper is used to insulate copper wire in homes and is being tried as the basis for plastic conduit and tubing.

If paper should become a major component of the economical house of the future, the amount of paper which would be required to serve the ballooning world population staggers the imagination. By 1977 it is estimated that the world population will reach 3,000,000,000 with one-third of this number needing new housing. If one allows for 200 lbs. of paperboard per house, it can be easily calculated that if the dream of the paper house should become an actuality, this new use alone would consume a stupendous tonnage of paperboard.

Another phenomenon that has taken place in the wood cellulose field in the past fifteen years has been the proving of paper as a superior substitute for textiles in uses such as packaging cement, animal feeds, fertilizer, flour, sugar, lime,

etc. This relatively new innovation in packaging—the paper multiwall bag, consumed three quarters of a million tons of paper in 1956—almost equalling the output of the old standard lines known as grocers sacks, notion, millinery and garment bags.

Already paper research is looking at the clothing field, fantastic as it may seem. Wool and cotton are growing more expensive—therefore, the expanding world of tomorrow will require more economical material for clothing than now exists. It is not at all improbable that science and industry, through chemical treatment of paper, or paper used in combination with other fibres may meet the low-priced clothing needs of the future.

It is well to keep in mind that when peering into the future it is sometimes wise to look back at the past. As you all well know, cleanliness and sanitation in the civilized countries of the world have shown a marked uptrend in the past half century. As the standards of living advanced, so did cleanliness and sanitation, and it seems inevitable that they will continue this trend in the years ahead. One of the most economical and valuable handmaidens of this progress is the tree's most important derivative—paper. Just think what a predicament we could be in today if we did not have paper packaging, tissues and the myriad of other items that embrace paper usage today.

In the world of tomorrow is it too visionary to contemplate paper as the emancipator of the housewife to the laundering of bed sheets, aprons, etc? Not according to the Paper Chemicals Department of American Cyanamid Company whose research into the possible new markets for paper is developing potentials that make the papermaker's head swim. This company believes it has not even touched upon the vast hidden consumption of paper in industrial production, in the office, and in the whole make-up of industry that serves the individual family.

It is estimated that the present forty million American families will swell to fifty-five million by 1977. If, for example, paper sheets and aprons should become an economic and useful reality, the amount of paper required to service this market alone would run into heavy tonnage figures.

I have endeavored to give you a glimpse into the exciting potentials of the pulp and paper industry, and why my company is devoting so much time and study to the factors which can influence our future growth and profits. The prologue to this dramatic vista begins modestly for my company in the middle of the 19th century when the German artisan, Keller, was working on his mechanical wood pulp process. At about the same time, an American, Francis Wolle, of Bethlehem, Pennsylvania, invented and put into operation the first paper bag machine. In 1861, Wolle and others formed a co-partnership under the name of Union Paper Bag Machine Company. The organization which I represent today is the outgrowth of that earlier enterprise.

HISTORY OF COMPANY

Union Bag-Camp Paper Corporation is an outgrowth of consolidations and mergers of other enterprises, the oldest of which was the Union Paper Bag Machine Company—a co-partnership organized in 1861 for the purpose of acquiring four patents in the paper bag making field and for the

manufacture and sale of bag making machinery under license.

In 1899 six paper and paper bag organizations merged under the name of "Union Bag and Paper Company." During the period 1900-1908, the company expanded its operations through the acquisition of pulp and paper mills, woodlands properties and lumber mills in the St. Maurice district in the Province of Quebec. These properties were disposed of in 1925. The business entity, known until July of last year as the Union Bag & Paper Corporation, was organized in 1916 to acquire the assets and business of the Union Bag & Paper Company and the Riegel Bag & Paper Company.

Through the 1920's Union owned pulp and paper mills at Hudson Falls, New York; Tacoma, Washington; Kaukauna, Wisconsin; Sheboygan, Michigan, as well as bag factories in Hudson Falls, New York; Chicago; Los Angeles; and Bogalusa, Louisiana. Today all of these old properties are no longer with us. Instead we have the world's largest integrated pulp, paper and board mill, corrugated box plant and bag factory at Savannah, Ga., a bleached and unbleached kraft pulp, paper and board mill at Franklin, Va. (formerly Camp Manufacturing Company), corrugated box plants at Chicago, Illinois, Boston, Massachusetts, Trenton, N. J. and Lakeland, Florida, a multiwall bag factory in St. Louis, Missouri, a standard bag and foil-laminated products factory at Richmond, Virginia, and a product development laboratory and a paper honeycomb plant at Hudson Falls, N. Y.

NEW ERA BEGINS

A new era began for Union when the year 1935 came to a close with total sales of \$9½ million. This was the year that we broke ground in Savannah for the construction of our new pulp and paper mill which started making paper in August, 1936. The Board of Directors and the Management were so encouraged by the results of the operation of the first machine that they authorized the construction of two additional ones, which were completed just in time to meet the 1938 depression. However, despite the chaotic conditions of that time we were able to sell \$16½ million of products and wound up with a net profit at the end of 1938 of \$904,000. During the 1938 depression we pushed our capacity to its limits, running the mill three shifts a day, seven days a week.

The fourth unit was completed at the end of 1942 and the fifth in 1947. In 1953 we entered a new field of pulp and paperboard making by converting the No. 2 machine to make semi chemical board from hardwood. In addition we added a new machine—the sixth.

In July, 1956, the stockholders of Union Bag & Paper Corporation and Camp Manufacturing Company of Virginia approved a merger of the two companies.

The business operated by Camp was started by the Camp family 70 years ago. Operations at its plant site date back more than 100 years to a sawmill which commenced business at Franklin, Virginia, in approximately 1850 and which was purchased by the Camp family shortly before 1887.

Camp was engaged in the manufacture of bleached and unbleached kraft pulp, paper and board, steam distilled turpentine, tall oil (used in soap, paint and other products)

and lumber. It owned paper and lumber mill facilities located on the Blackwater River near Franklin, Virginia, a converting plant at Richmond, Virginia, and approximately 240,000 acres of timberlands. Camp also owned a 68½% interest in Stocker Manufacturing Company.

During 1955 paper products (including those of Stocker) accounted for approximately 85%, and lumber products accounted for approximately 12%, of the consolidated dollar net sales of Camp and Stocker. Total production of paper products at Franklin facilities amounted to 127,089 tons, approximately 52% of which consisted of bleached kraft products and 48% of unbleached kraft products.

In general, Camp disposed of its products within a radius of 350 miles of its manufacturing operations. Through its own sales force, it sold paper products to wholesalers, converters, manufacturers and consumers and lumber to manufacturers and building suppliers. Tall oil and turpentine were sold to manufacturers.

Camp's lumber manufacturing operation, consisted of a sawmill with an average hourly productive capacity of 10,000 feet of rough green lumber.

The plant produced all standard grades of oak flooring, pine and cypress lumber used by the building trade, and manufactures finish, trim, molding, siding, roughing, sheathing, and other building materials. Camp also owned and operated a converting plant at Richmond, Virginia, for the manufacture of various products from paper, including bleached and unbleached grocer's bags, millinery bags, sacks and foil-laminated products.

On the effective date of the merger, Mr. J. L. Camp, Jr., was elected vice chairman of the Board of Directors of Union Bag-Camp Paper Corporation; Mr. Hugh D. Camp, executive vice president in charge of the Camp Division, as well as chairman of the Planning Committee and a member of the Board of Directors; Mr. W. C. Shorter, vice president; Mr. John Camp and Mr. W. M. Camp, directors.

We were particularly glad to have these old friends of ours become a part of our business family. Their long and specialized experience in bleached and unbleached kraft pulp and paper making and forest management, along with their outstandingly profitable operation of the Franklin property since its inception in 1938, brings to Union additional strength in management ability, diversity of product, plant location and timberland resources.

EXPANSION AND MODERNIZATION PROGRAM

The directors of Union have recently approved a major expansion and modernization program for the Company's Savannah plant. This will involve the installation of a new paper machine, the seventh, and complete equipment for a new hardwood pulp mill. The program will get under way immediately and is scheduled to be completed within three to four years, with the increased productive capacity coming in gradually year by year over that period.

The new paper machine will produce principally lightweight kraft papers at speeds up to 2,500 feet per minute. The building of the new pulp mill for the utilization of hardwoods is one of the most important aspects of the program, as it will enable the plant to use greatly increased quantities of those types of hardwood for which there is

little or no market at the present time. In addition, the harvesting of hardwoods will contribute to a program of better forest management. At present, hardwoods are retarding growth of pine trees on many Southern forest tracts.

Looking into the more distant future, we have recently acquired 5,000 acres at Tuscarora, 12 miles west of New Bern, North Carolina, as the site for a pulp and paper mill. Construction of a new plant at this location is not contemplated until the expansion program at Savannah and Franklin have been completed.

We are quite proud of our earnings record in Union, for with the exception of three months in 1943 the company has earned a profit in every quarter since 1932. The loss period in 1943 (first quarter \$188,074) was caused by drastic government controls which had to be corrected later. If this had not occurred, Union would have had the distinction of operating in the black for 97 consecutive quarters. For the past twenty years Union Bag's operating profit after depreciation has averaged about 20%. This compares with an average of about 15% for eleven other major paper companies for this period. Union was first in average profitability of this group. For 1956 profit was 25%.

DIVIDEND POLICY

In connection with our dividend policy, some investors have asked the question "why not pay larger dividends to stockholders rather than plow back so much money into plant?" Well, as you know, the history of American industrial enterprise is full of examples of companies going out of business as the result of neglecting improvement in plant and planning for the future. To be sure, some kinds of business can pay larger dividends than others. But in the case of companies which are considered to be in the so-called "growth" class, it is imperative to divert a substantial part of earnings into plant improvement and enlargement. If this is neglected a company can in a relatively short space of time lose its competitive ability and be relegated to a marginal position.

The directors of the company for many years approved a policy of putting back into the business more than 50% of net profits. This policy through the test of time has proved to be sound as it has enabled the company to expand rapidly without excessive borrowing, to improve its operating efficiency, and to effect substantial reduction in operating costs. Reactions from stockholders indicate a hearty support of this policy. In the last 20 years the company has paid dividends in every year with one exception—1939. In the post-war years leading paper companies averaged a 45% dividend payout. For manufacturing corporations generally the pay-out has averaged 46%. Union's pay-out was 47%. It was 50% in 1956.

Currently the productive capacity of our two paper mills stands as follows: The Savannah mill with six machines has a capacity of approximately 2,000 tons of unbleached kraft paper and paperboard per day. The Savannah mill capacity will be increased from 2,000 to 2,400 per day upon completion of the seventh machine and new hard wood pulp mill. The increase in capacity will come in gradually over the next four years. The Franklin mill has three machines with a capacity of approximately 425 tons per day of

bleached and unbleached kraft paper and paperboard. A new paper machine is being built at Franklin which when completed in the latter part of 1958 will raise the total mill capacity to 600 tons per day. The new unit is designed to produce fine uncoated printing and converting papers. It is believed by the management that the Franklin mill is the most diversified bleached paper mill in the country as to weights and furnish mixtures.

The company's sales tonnage breakdown for 1956 was as follows: Bags, approximately 32% of total production; paperboard, 33%; boxes and sheets, 14%; market and waterproof paper, 19%; with tall oil, pulp and miscellaneous products, making up the balance of 2%. The total products sold in 1956 amounted to 833,000 tons plus some 30,000,000 feet of lumber.

Dollar sales product breakdown for 1956 was as follows: Bags represent approximately 43%; paperboard, 22%; paper, 18%; boxes and sheets, 14%, with pulp, tall oil, lumber and miscellaneous products making up the balance of 3%. Total dollar sales were \$163,000,000.

The question is occasionally raised why we added a sixth machine at Savannah rather than build a new pulp and paper mill elsewhere. The answer to that is, in the first place, the cost of building at a new location plus adequate timberland reserves would have been about double what it cost to install the sixth machine and Semi Chem project at Savannah. We already had various excess facilities such as power, chemical recovery, maintenance equipment facilities, certain sections of wood preparation, as well as office and storehouse space and management supervision.

Then there was the most important matter of utilization of hardwood from our own forests in the manufacture of Semi Chem board. This utilization permits to some extent the restocking of former hardwood land with new pine growth. Also we added less than 250 additional employees to the payroll, whereas a new mill would have required at least twice that number. The many personnel, community relations and other problems of starting up a completely new operation in a new area were also avoided.

TIMBER RESOURCES

One of the important questions to be raised in paper company analysis is that of timber resources. In our opinion, Union is strongly entrenched as far as long-term timberland reserves are concerned. It presently owns or controls nearly 1,300,000 acres of pine and hardwood timberlands situated in Georgia, northern Florida, South Carolina, North Carolina and Virginia.

For many years Union purchased around 90% of its pulpwood requirements in the open market. During 1956 the figure approximated 80%. Pulpwood removal from our own lands is scheduled in the main in our scientific long-term forestry planning to secure maximum growth.

As research is always an interesting subject to stockholders, I will touch briefly on our activities in this field, which is under the direction of a vice president of the company.

In Union we define research as any experimental project conducted to find methods of reducing costs, increasing production, or producing new products. This definition covers a large part of the work of the following departments:

The Woodlands Division at Savannah has many research projects in progress, with the principal object of finding methods of growing more wood on company land, finding optimum spacing of trees, how to make trees grow more rapidly and produce more seeds, how to grow pine in places where hardwood now grows, and to improve the quality of the wood for paper making. In 1953, a 3,000-acre experimental forest was established near Savannah, complete with a laboratory and office. The research staff was enlarged and an extensive research program has been started.

In the Savannah plant we have a large process engineering department which does research and experimental work on the pulp and paper making process. This department works on such projects as increasing the yield of pulp from wood, reducing waste, improving paper quality, increasing production and saving raw material. We are carrying on several projects in cooperation with the Institute of Paper Chemistry, which include a development of more useful tests for paper and the evaluation of pulp strength.

At Savannah the engineering department is continually trying out new bag machines or new uses for old machines. These experiments are intended to speed production, improve quality, or cut down on manpower requirements.

PRODUCT DEVELOPMENT

The product development department at Hudson Falls has the principal research purpose of designing and testing new types of bags. Almost every product which is packaged in paper bags or boxes requires a new design. This laboratory recommends to the sales department 15 or 20 new bags for special purposes each month. A few examples are: iced corn bags, animal feed bags, bags for chemicals, cabbage, potatoes, sweet potatoes, onions, and other vegetables, as well as multiple unit bags to hold ten rolls of toilet tissue.

We also have a department specializing in the development of corrugated boxes to meet new requirements. The principal emphasis has been on packaging of fruit and various kinds of produce. Our most recent new product developments have been corrugated containers for citrus fruits, lettuce, apples, tomatoes, mushrooms, cucumbers, watermelons, as well as ammunition carriers, straphandle boxes and trough feeder boxes for baby chicks.

The time allotted to me today does not permit telling about many other exciting packaging products we are working on, which we believe will develop into substantial new consumers of paper and board. You have no conception of the thrills we paper people get out of creating one new packaging medium after another and then seeing them blossom into commercially useful products that will contribute to our future growth and profits.

For example, I recently asked the head of our corrugated box designing division about his latest ideas on new boxes for the future. I was surprised to hear him say that he was working on a box for dynamite, on the application of corrugated board to the building industry for use as concrete forms in laying concrete floors, and on corrugated boxes for the shipment of fresh fish and fresh poultry.

And so it goes, out of the air and the mind, from the customer and the inventor, original ideas come rolling in

to tax our creative ingenuity in making new or improved packaging mediums for industry and the consumer. For Union this fantastic development of packaging mediums has been going on for nearly one hundred years and we see no diminution of the trend in the future.

Since 50% of wood is not fiber—that is, cannot be made into paper and must be utilized in some other way—we have a large research program at Savannah to find uses for our by-products. We are refining and selling tall oil, which contains most of the rosin and fat from the pine wood. As tall oil is meeting increasing competition from other materials, we have a comprehensive program of research in progress to improve its quality. A \$2,000,000 distillation unit went on stream at Savannah in May, 1956. It upgrades tall oil by separation into pure rosin and fatty acid products.

Lignin, a plastic-like material which binds the fibres together in the living tree, comprises about 25% of wood and is now burned as fuel in most Southern mills. It has valuable chemical qualities which research in the future may develop into a number of profitable uses. Our policy is to continue burning lignin for the present, but we are keeping a close watch on the technical research and progress being made.

We belong to the Fourdrinier Kraft Board Institute, which is carrying on basic research designed to develop new information about kraft board and apply the information in finding new markets for kraft board.

In much of our research we have work done for us by outside agencies in close cooperation with the work which is done within the company. The Duke University School of Forestry has done a great deal of research for the Woodlands Division. The company is a member of the Institute of Paper Chemistry, which carries on an extensive fundamental investigation of wood and paper chemistry. This is the kind of work which, although very valuable, is ordinarily too expensive for one company to carry on alone. In addition, the Institute is working on two special projects for us relating to pulp and paper making. We can also consult with the experts in the Institute of Paper Chemistry on our research problems. The Battelle Memorial Institute in Columbus, Ohio, is also working on different phases of by-product research for us.

OVER 4,000 ACCOUNTS

I suppose you might be interested in knowing something about the customer set-up of Union Bag. We have over 4,000 accounts on our books. They represent a pretty good cross section of American commerce and industry. Briefly they include big chain stores, sugar refineries, canners, brewers, food manufacturers, cement, feed and chemical companies, electrical appliance manufacturers, packaging converters, and a host of others whom we sell direct.

This group includes the principal consumers of our corrugated boxes, multiwall and specialty bags, paper and paperboard. Our standard bags, such as grocers and variety types, are largely marketed through jobbers who deal directly with their tens of thousands of customers all over the country.

For just a moment I would like to talk on the export

situation. The Scandinavian countries previously dominated the world market because of their aggressive export policies. American companies tended to stay out of the world market except when the market slumped in the United States. Well over half of Canada's production, with the exception of newsprint, went for use within the British Empire. No other countries produce kraft in any large quantities.

Russia and the iron curtain countries represent a source of paper but all of their production is used internally. The Russians used to supply wood to European mills but since World War II all of these shipments have been cut off.

Scandinavian countries have lost some of their position in the world market, partly through lack of production and partly through their highly opportunistic sales policies. Production in the Scandinavian countries in 1955 was only some 15% above pre-war levels. Excessive wood cutting during World War II sharply reduced the wood supply. Recent surveys have indicated that the situation is somewhat less critical than formerly believed, but nevertheless it seems certain that wood supply sets a definite limit on the expansion possibilities in Scandinavian pulp. Also, the Scandinavian industries have started to use products made of kraft paper on a larger scale and have thus used up much of the production that used to go for export. Scandinavian suppliers are now more interested in exporting products made of kraft pulp rather than the kraft pulp alone. Thus, they have become the competitors of their former customers, i.e., the converters throughout the world.

When kraft paper became extremely short due to the outbreak of the Korean War, the Scandinavian suppliers boosted their prices unmercifully. As a result, they alienated many of their larger customers, particularly those in England. These customers turned to the United States for supplies.

It is very likely that Europe will continue to buy from the United States even if business should get back to normal competitive conditions. It is unlikely that Scandinavia or any other producer of kraft in Europe will be able to meet the ever-growing demand.

Between 1950 and 1955 pulp production in Scandinavia increased by 1,971,000 tons. Of this increase 34% went for export, 66% for home consumption.

POTENTIAL FOREIGN MARKET

As the tremendous growth of the kraft paper industry in the United States has not been equalled in the rest of the world, you can get some idea of the tremendous foreign market available for potential development by examining the following figures:

Annual per capita consumption of all forms of paper in the United States is well over 400 lbs., 421 lbs. in 1955, estimated at 435 lbs. in 1956.

Annual per capita consumption of all forms of paper outside the United States is 20 to 25 lbs.

Annual per capita consumption of all forms of paper in the European countries, excluding Scandinavia and England, is 55 to 60 lbs. Scandinavian and English per capita paper consumption is in the 160-pound range.

Assuming a total population of 700 million people in

Europe, Africa and South America, of which 300,000,000 can be effectively reached, an increase of a single pound of annual per capita consumption in those areas will involve 150,000 tons of paper annually. In view of the startling increase in the use of paper in the United States since World War I, the possibility of increasing annual per capita consumption abroad by 1 to 10 lbs. is not far fetched. Also who can tell what may develop in the long-term future for India and China with its combined populations of nearly one billion people.

Union's exports in 1951 amounted to over \$2,000,000 of our total sales. In 1952, this figure reached \$3,700,000. In 1953 export sales were about the same as 1952, but in 1954 the figure rose to \$5,500,000. In 1955 we hit a new high of \$7,600,000 and topped that figure in 1956 with sales of \$8,600,000, or 5% of total sales.

A present estimate of the foreign market for United States kraft indicates that by 1960 kraft paper, paperboard and pulp shipments could easily double the 1956 exports of these products. This assumes no war and a continuance of the present favorable currency situation. Thus, for the first time, the foreign markets for United States kraft will become an important long-term factor in the well-being of the United States kraft industry.

Beginning with 1899, studies reveal total United States paper and board consumption per capita increasing substantially each decade above the levels of the preceding ten years. The increase by decades has been 1899-1909, 32.9 pounds; 1909-1919, 28.9 pounds; 1919-1929, 100.7 pounds; 1929-1939, 23.4 pounds, and 1939-1949, 87.3 pounds. The smallest advance was during the decade of the severe depression of the 1930's. Beginning with 1949, there has been a further increase of about 104 pounds to the 1956 estimate of 435 pounds.

Based on this pronounced growth trend, the per capita consumption of paper and board should be at least 450 pounds within five or six years, and probably nearer 475 pounds. Even the more conservative figure indicates dramatic growth. Multiplying by the expected 1960 population of 178 million (Census estimate), the total consumption would amount to 40 million tons. Allowing for imports of some 5 million tons, chiefly newsprint, the production requirements of the industry would approximate 35 million tons, compared with some 31.5 million tons produced in 1956, a growth of 11% in 4 years, or, compounded, about 2.7% per year. (Using the higher estimate of per capita consumption indicates a growth rate of about 4% per year.)

"GROWTH PATTERNS"

The National Industrial Conference Board study, "Growth Patterns in the Paper Industry" (May 1952), reveals that very few industries with statistical records as long as the paper industry can boast a current rate of growth as robust as that of paper. This report covers the period 1899 to 1950 and shows that the current rate of growth of the industry is approximately 3½%. Excluding newsprint, the growth rate is greater; paperboard alone is increasing at a 4 per cent rate.

If the trend of per capita consumption should continue

its present growth rate and population in 1975 should reach the Census estimate of 225 million people, the indicated consumption of paper by that year would be just about 65 per cent greater than the 1956 consumption of about 36.5 million tons, or somewhat greater than 60 million tons.

The Stanford Research Institute report for Weyerhaeuser Timber Company has estimated that total paper and board consumption may reach 53.5 million tons by 1975, with net imports of 6.9 million tons and domestic production of 46.6 million tons. These figures represent increases of about 47½ over corresponding figures for 1956.

Any long term conservative appraisal of paper consumption indicates very little diminution of the vigorous and dynamic growth trend of the industry.

Our management believes from the evidence available that technological developments, population growth, increase in foreign markets and many other factors will serve to make the next two decades even more dynamic.

It is by no means our intention to sit back and watch the procession pass by. On the contrary, we will participate most energetically in expanding our facilities of manufacturing, research and raw material supplies, as well as developing bigger and newer markets both here and abroad. Over the next four years Union-Comp. will spend \$77,000,000 to this end. It should be realized, however, that a major expansion program today involves tremendous financial requirements and should be undertaken only after the most exhaustive study of changing market trends, existing and expected productive capacity, new product developments, availability of labor, labor rates, transportation costs, pulpwood, water supply and other factors.

In conclusion I would like to summarize a few points. Growth during the past twenty years has been primarily through internal efforts and not through mergers or consolidations. The company operates in one of the fastest-growing divisions of the fast-growing paper industry, the fifth largest industry in dollar volume of sales in the United States.

Since the opening of the Savannah plant in 1936, tonnage output has increased markedly. Shipments in 1955 were almost 800% ahead of 1935. In 1956, with the inclusion of the Camp tonnage, the increase is not far from 1000%. For pre-tax profits, the corresponding increase in 1955 was 10,900%, and in 1956 16,200%.

Operations have been profitable in each of the past 24 years. In fact, as I said earlier, operations have been profitable in each of the past 97 quarters, except for one quarter of 1943, hit by an OPA price rollback.

The company is integrated and in relation to size controls some of the largest reserves of timberland in the industry. These reserves of nearly 1,300,000 acres are situated in what is considered probably the best natural tree farm area in the world.

The company is among the lowest-cost major producers of paper products in the industry, with excellent labor and public relations and low turnover of employment.

The time and effort expended in the field of community relations have resulted in our being considered a good neighbor in the areas of our mills and factories.

The financial position is strong, with present capitalization consisting only of common stock and an insignificant debt of about \$2,000,000.

Over the past twenty years, operating profits after depreciation averaged in excess of 20% of net sales, the highest of any other leading paper producer in the United States.

In view of this record of growth and profitability over the past twenty years and the present strength of Union-Camp as far as mills, factories, woodlands, quality of products, finance, labor and management factors are concerned, it is perhaps understandable why we look forward with optimism to the coming age of wood and paper.

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The Clark Controller Company

ROBERT H. HOGE

President, The Clark Controller Company

I WOULD LIKE TO BEGIN any talk that is made here this morning by stating the remarks with which I have frequently ended my Annual Reports. A company such as The Clark Controller Company, to a large extent, is the master of its own fate or destiny in the fact that it can create markets by invention and the adaptation of old products to schemes for more modern processes throughout all industry.

The Clark Controller Company manufactures two extremes of equipment. At one limit of our scope, a trip through our plant would impress a visitor with the variety of small devices being made in volume, packaged at the end of the production line and shipped to distributors' warehouses. Surpluses, of course, are stored in Company warehouses for future delivery. From an economist's point of view the manufacturing and selling problems of this extreme of our business differs little from the familiar problems related to consumer manufacturing and merchandising.

We must estimate in advance the requirements for a given period of time, must risk capital in sizable inventories and are dependent for our success upon the ability of a complex distributing organization. This organization is composed of our own district representatives and independent local distributors or wholesalers and retailers.

From an electrical point of view the components or devices that are merchandised as indicated above, while simple in design and limited in complexity, suggest the nature of our business as being concerned with controlling power so as to render automatic, functions that were previously accomplished by manual or cruder mechanical means.

The pictures displayed of our pushbuttons, across-the-line starters and limit switches are representative of these packaged, or merchandised, type of products.

At the other extreme of our business are the custom-built, specially engineered, vastly complex control panels that control complicated processing lines or synchronized and inter-related manufacturing methods or systems.

These special engineered controls are the essence of automation.

The word "automation" actually describes a degree, rather than a kind of engineering activity. It has been the business of The Clark Controller Company and some other electrical control companies to cooperate with our customers' engineers in rendering machines more and more automatic with the resulting improvement in the precision of results and the output per man hour. The present trend continues the complexity of this work and more and more combines and synchronizes groups of machines into continuous lines and so inter-relates their functions that the chosen performance of one machine is the initiator of the correct and synchronized performance of the second, and so on, in continuing performance. Therefore, in the language of today the other extreme of The Clark Controller

Company's products and services is properly comprehended in an understanding of the field of automation.

In between these two extremes are many types of controls involving more or less complex engineering solutions. Many of our special products approach the standard packaged items described first in this paper.

For example, a small hoist controller may operate through the function of magnetic amplifiers and certain rather complex control schemes. Because of repetitive demand for this product it eventually leads to the mass production techniques in manufacturing and the merchandising type of selling. Therefore, as stated, it would appear in our classification as a "standard product" but, nevertheless, it would be one that could only be correctly produced and sold by a company experienced and staffed with engineers capable of engaging competitively in the work described under automation.

These classifications of our business have particularly unique meanings for the analyst attempting to understand The Clark Controller Company. The standard products have increased the width of our market.

Historically, The Clark Controller Company began to serve industry by meeting the growing demand for special engineered products custom-built to the individual job. This class of business is closely related to new manufacturing and plant expansion, and that primarily in the heavy industries. Any analyst that studied our company in the past was aware of its cyclical nature. These cycles in our operation have reflected the cycles in the plant expansion activities of heavy industry.

This old cyclical characteristic of Clark Controller is not prominent in its recent history or current picture.

For example, standard products sold through distributing organizations ten years ago were 2 to 3% of Clark's net sales billed. A normal year now would reflect more like 25 to 30%. In addition to the increase of sales through distributing channels there are many of the intermediate products, or modified standards, that reach a much wider market among more diversified industries than were known to Clark Controller, say, ten years ago.

Also of interest to the analyst is the matter of our interest in automation. At the risk of repeating myself, I would like to point out that this field is home territory for Clark Controller. All special engineered control problems have been by way of making automatic what was previously manual. It has been our business to "automate". We consider that "automation" is a fitting identification of a field of activity that was not completely described by the words "control and related special engineering solutions to problems of industry".

It is in this field that Clark Controller may be expected from time to time to create its own markets by the invention and application of devices that do a better job of

"automating" and may be expected to continue developing circuits and control systems that increase productivity and lower cost.

In a less dramatic sense, Clark Controller has in the past—and should in the future—create markets also by invention of devices not immediately classified under "automation". The photograph of the automation limit switch represents a device specifically in the automation field. The photograph of the safety valve represents a device creating new markets in the second classification.

STATIC CONTROLS

At this point I would like to mention "static controls", which are good examples of trends in control that create markets by the development of both devices and circuits.

In the control engineering profession today the words "static control" are descriptive of controls made from components such as electronic tubes, transistors and magnetic amplifiers.

Each of these devices to a degree are somewhat valves in that they permit or inhibit the flow of electricity upon controllable signals.

The electronic tube is familiar to all in the radio and television and is probably the most versatile of the static devices as regards the precision and number of functions that are possible. It has the limitation of being breakable in glass and internally is composed of fragile parts. To multiply the number of tubes to accomplish complex results requires substantial space.

The transistor is minute in size, somewhat limited in function relative to the tube, but requires unbelievably small space and is relatively rugged. This is not the place to explain in detail the transistor, but it is simply a piece of silicon or germanium of minute size appearing inert and impossible to operate.

The magnetic amplifier is practically described as three coils of wire on a laminated coil and in appearance resembles a transformer.

Except for the power circuits any conventional control function can be performed by all or one of these static devices. They are selected for application because of demands of the particular jobs as related to sensitivity, extreme precision, space requirements and life. The dramatic side of static control may be related to their ability to handle functions that are properly described as delicate. Mechanico-electrical devices may theoretically perform certain delicate functions but would in practice prove crude.

For example, initiators become light rays, colors, capacitances and inductances. This fact has opened new fields to the control engineer.

There is no particular industry to which Clark Controller is exclusively or particularly related. We have been strongest in the metal processing industries, both ferrous and non-ferrous; have been principal supplier to certain parts of the automotive industry; but are strong competitors in supplying controls to all types of industry. For example, I am handing you gentlemen a copy of our March-April Contactor magazine which taken at random shows controls for on-the-ground checking of B-52 electronic airplane gear, controls for plastic products manufacturing, wire products

and the world's largest conveyor. Anywhere that industry uses electric power Clark Controller is a strong competitor for the automatic control equipment and is the principal supplier in many cases.

But as analysts I am sure you would like to hear more about the financial results of these operations. One of our best answers is to present you with a copy of our Annual Report. This report includes, inside of the back cover, a ten year comparison of significant operating data and shows the unique pattern of our company.

Briefly, in 1947 our net sales billed were in excess of \$7,700,000. This figure consolidated for 1956 showed \$24,000,000. Net profits were \$516,000 in 1947 and \$1,600,000 in 1956. It is interesting to note that our profits as a per cent of net sales billed in 1947 equalled 6.6% and coincidentally were 6.6% in 1956. Considering that taxes are higher in 1956 there is an indicated gain in margin before taxes. We regret to say, however, that labor costs and taxes have increased during this period so that it has not been customary for us to earn this margin during slump periods. For example, in 1953, '54 and '55 our margin was just in excess of 4.5%, even though profits were substantial and operating results were considered generally good.

You can pick out the figures for yourself, but I would mention that net worth has increased from just under \$3,000,000 to \$9,500,000 in this ten year period. Consequently the book value of our common stock is now \$21 per share, compared with \$7.84 in 1947.

Being analysts you recall that we paid a 10% stock dividend at the end of 1956 and have continued for sometime the \$1 per share annual dividend.

Other numbers that reflect the growth of our business include an increase in plant area occupied; from 153,000 square feet to 386,000 square feet at the end of 1956. We have further increased our plant capacity in 1957 and I wish to comment on that specifically later.

The figures for 1953 through 1956 are consolidated with the Good Roads Machinery Corporation which was acquired in 1953. These figures do not greatly alter any study that may be made of The Clark Controller Company proper. The Good Roads Machinery Corporation has a net sales billed of about \$3,500,000, but all excepting approximately \$1,200,000 is manufacturing operations for the parent company and in consolidation duplications are eliminated.

To comprehend the engineering nature of our business it can be noted that at the end of 1956 the company's engineers and draftsmen totalled 177; compared to 99 in 1947. This figure is even more impressive when you take into account that an additional 98 field representatives are almost without exception technically trained engineering graduates.

STANDARD PRODUCTS DIVISION

From the emphasis upon the development of standard products and the merchandising of these products has grown a business in the last ten years that now deserves complete divisional status. We have acquired, in March of 1957, a plant of 170,000 square feet located on Woodland Avenue here in Cleveland that is in addition to the 386,000

square feet reported in 1956. This plant is modern in all respects and peculiarly adapted to mass production techniques required to obtain competitive low costs.

This building will be occupied in October and will house the Standard Products Division of our Company. This division will be headed by a General Manager, will be autonomous within the normal framework of company policies and goals for the purpose of exploiting more fully the many new products in this category that have been developed in recent years. It is our expectation that growth will be accelerated, cost of manufacturing will be reduced and even further product and market development will result naturally from the selective treatment that will be given this important of our total business.

Many analysts like to consider the general nature of a company along with the specific facts of its business. We are an organization that is organized along the most modern lines of horizontal functional divisions integrating the work of vertical divisions that are related to the hard core of the company, somewhat as subsidiary to parent company. We believe we gain in this way the maximum incentive without losing an integrated sense of direction and over-all policy.

Our personnel policies are modern. We negotiate with a branch of the C.I.O. union and operate under yearly or longer contracts. Our employees relations include a high-grade retirement program paid for by the company, hospitalization and a liberal vacation plan. Customary recreational and morale building associations are run by employees and sponsored by the company, such as regular athletic events, an Old Timers Group and an annual get-together at Christmas. Suggestions of these are indicated in our annual report, copies of which you now have.

I have told you of the broad scope of our products and the stabilizing influence in our business that results from this scope. I have suggested to you the promise for future growth that lies in the inventiveness that is inherent in our type of business and its peculiar relationship to the important trends of automation. I hope you have also seen that records of our past years reflect a growing stable company that is now well prepared to take advantage of its opportunities for the future. I have indicated that we have organized to accomplish certain specific results and have set goals for our various divisions to provide the company's sense of direction.

CONSECUTIVE QUARTERLY DIVIDEND NO. 227

The board of directors of The Electric Storage Battery Company today declared a regular quarterly cash dividend of 50 cents a share on the common stock outstanding, payable June 28, 1957 to stockholders of record at the close of business June 10, 1957.

E. J. DWYER, Vice-President
and Secretary
May 8, 1957



THE
ELECTRIC STORAGE BATTERY
COMPANY

Dividend No. 52

Interlake Iron Corporation has declared a dividend of 35 cents per share on its common stock payable June 29, 1957, to stockholders of record at the close of business June 14, 1957.



J. P. Bagan
Exec Vice Pres. & Treas.

Interlake Iron
CORPORATION
CLEVELAND, OHIO

Plants: Beverly, Chicago, Duluth, Erie, Jackson, Toledo

ELECTRIC BOND AND SHARE COMPANY

NEW YORK, N. Y.

Notice of Dividend

The Board of Directors has declared a quarterly dividend of thirty-five cents (35¢) per share on the Common Stock, payable June 28, 1957, to shareholders of record at the close of business on June 7, 1957.

B. M. BETSCH,
Secretary and Treasurer
May 23, 1957.

AIR REDUCTION

Company Incorporated



160th CONSECUTIVE

COMMON STOCK DIVIDEND

The Board of Directors has declared a regular quarterly dividend of 62½¢ per share on the Common Stock of the Company, payable on June 5, 1957 to holders of record on May 18, 1957. This represents an increase of 12½¢ per share. The Board also fixed May 18, 1957, as the record date for the twenty-second regular quarterly dividend of \$1.125 per share, payable on June 5, 1957, to the holders of the Company's 4.50% Cumulative Preferred Stock, 1951 Series.

April 24, 1957

T. S. O'BRIEN, Secretary

Dividend Notice

JEFFERSON LAKE SULPHUR COMPANY

The Board of Directors, at a meeting held on April 18, 1957, declared the regular quarterly dividend (No. 56) of 40¢ per share on the Common shares, payable June 10, 1957 to shareholders of record May 17, 1957.

CHAS. J. FERRY
Vice-President &
Secretary



THE DAYTON POWER AND LIGHT COMPANY

DAYTON, OHIO

139th Common Dividend

The Board of Directors has declared a regular quarterly dividend of 60¢ per share on the Common Stock of the Company, payable on June 1, 1957 to stockholders of record at the close of business on May 15, 1957.

GEORGE SELLERS, Secretary
May 3, 1957

National Cash Register

G. A. LOWDEN,
Executive Vice President, National Cash Register Co.

MY ASSIGNMENT TODAY is to tell you all about the National Cash Register Company in about thirty minutes. With the time allotted, I think the best procedure would be to give you an over-all picture of the company, and then, if there is anything specific you may be interested in, I can cover it in the question period.

I know your interest in our company is not in its past, but perhaps a little history will help give a better picture.

The company was started in 1884 at Dayton, Ohio, which is still our main office and factory, and has therefore been in business 73 years. The cash register idea was born on shipboard to a business man who was on vacation and wondering how things were going at the store. With this on his mind while walking through the engine room, the paper dials registering pressure time, etc., caught his eye. He reasoned that with a business machine to record financial transactions he would be able to review his business activity on his return.

The first attempt was a key to a dial machine which punched positioned holes in a paper dial to designate activity. Seventy-three years later we are back again punching holes in paper tape.

CONSISTENT GROWTH

Through the years the company has shown consistent growth, during the later years at an accelerated pace, earning a profit every year except three. In 1915, large reserves were set up against overseas investments, which later proved to be unnecessary. During 1930-31 sales were forced, to insure the earnings of a class "A" stock and prevent the loss of control by class "A" stockholders. The years 1932-33 showed losses, as cancellations were heavy on this forced business. Fortunately, today we have only one class of stock.

It took 63 years to reach the first \$100 million in volume; four more years to make the second \$100 million; four more years to make the third \$100 million. That was in 1955, and it looks as if we might hit our fourth \$100 million this year, which is a little ahead of schedule.

Our product line for many years was, of course, cash registers. The name "The National Cash Register Company" no longer covers our operations today. In the early 1929's we entered the accounting machine field. In 1929 we acquired the Ellis Adding Typewriter Company, to add a typewriter-style accounting machine. Today, accounting machines represent about 40% of our business. Later, important additions to our products were a line of adding machines, and more recently the NCR carbonless paper.

Our products were originally distributed in the United States through general sales agents, but in 1942 the company took over all agencies and now operates about 500 branch sales offices.

Our overseas operations, which represent an important segment of our business, also had its beginning many years

ago. The founder of the company, Mr. Patterson, pushed the sales of cash registers all over the world with a religious fervor. He believed a man could be eternally damned for stealing, and if we removed this temptation with cash registers, we were performing a great service to humanity; and the whole world was his field.

Today we have representation in about 100 countries. The roots must have been firmly planted, as we have never voluntarily closed an office after it was once opened.

Overseas sales have kept pace with domestic sales and now represent about 40% of our total volume.

A few of our overseas offices have had to weather some difficult times through the years—dictators, wars, currency restrictions, etc. Their ability to survive points up, I believe, the basic toughness of the company. Branches like Argentina, Spain, Brazil, without new machines for four or five years at a time, have survived on second-hand sales, maintenance contracts, and supply business. They came through with organizations intact.

Through the years we have established manufacturing plants in Germany, Canada and Scotland. In addition, we have assembly plants in Sweden, France and Switzerland.

Our worldwide organization today totals 44,500 employees.

The company is classified, of course, as a part of the office equipment industry, which includes all types of mechanical business equipment as well as files, chairs, etc. The total sales of the office equipment industry in the United States was approximately \$2,000,000,000 last year. The office equipment industry produces labor-saving devices. As a result, this industry has shown consistent growth during recent years and its products will continue to be in greater demand as the nation's paper-work load increases and clerical wages continue to be such an important factor in business costs.

A recent survey showed that 15 years ago for every 10 workers there was only one clerical employee. Today, one employee in six is engaged in clerical work of some kind.

With the advent of a shorter work week with the same wages as now proposed in this country, the office equipment industry would again be called upon to help offset the additional cost.

There are many direct as well as indirect advantages gained if it is found possible to transfer clerical work to machines. Of course, the work is faster, and, too, the machine doesn't insist on two weeks' vacation pay plus annuity and hospitalization benefits. Fringe benefits alone today run from \$500 to \$800 per year, an important factor in a decision to mechanize.

Our products have wide application. We sell cash registers to every line of business where cash is handled and our accounting machines cover practically every machine accounting application. We say, "Wherever money is handled

or records are kept, there is a need for a product of the National Cash Register Company."

In addition to cash registers and accounting machines, we also market adding machines, business forms, and conduct a wide-spread service organization.

Our total sales volume would break down by product as follows:

Cash Registers	40%
Accounting Machines	32%
Adding Machines	4%
Supplies and Service	24%
	<hr/> 100%

Cash registers, still the largest product line in our business, represents an item which can be sold up and down every street in every city. The need for cash registers has not decreased, but has increased with the movement of retail selling to modern merchandising methods.

The check-out grocery principle and later, shopping center merchandising, which provides a major outlet for our products, continue to grow. There are now about 1,000 shopping centers in operation and 2,000 more under construction or planned. Large supermarket operations have reduced the total number of customers we had in small grocery stores, but the supermarkets require whole batteries of high-grade machines, and as a result, this market in total has been steadily increasing. Many machines are used 24 hours a day.

The grocery self-selection principle has also spread widely to other lines of business. Today, after much study, chains like Woolworth's are converting rapidly to check-out. Over a year ago, by count, 3,222 chain-variety units were operating with the check-out principle. Self-service stores find no percentage increase in shop-lifting and almost always achieve substantial increases in volume without any increase in operating expenses.

To meet the requirements of business today, we have a line of standard cash registers to cover every price range and need. In addition, we will build variations into most classes of machines to meet the special requirements of many customers. Our standard model cash registers range in price from \$275 to \$4,745.

In addition to new cash registers, we also sell factory rebuilt machines which contribute over \$15,000,000 per year to our volume in this country.

Our line of accounting machines covers a broad scope of business applications, from small business systems to hotels, banks, payroll processing, check writing and many others. Over half of these machines are also special-built to customer specifications.

Accounting machines constitute the fastest-growing part of our business. Since its start in the 1920's, our accounting machine operation has steadily increased until today it is almost equal in volume to cash registers. This is the segment of the business most likely to expand substantially in the years ahead. While we have had steady growth in our cash register business, we at present cover a large part of this market. On the other hand, we do not at present cover as large a percentage of the accounting machine market.

Our accounting machine market could expand much more within the total present business volume of that market.

We also merchandise a line of supplies for our equipment—paper rolls, ink, ribbons, restaurant guest checks, etc., and recently introduced a carbonless duplicating paper, which has had good reception in the business forms field. In 1957 the sale of this unique paper alone will amount to \$9,000,000.

Machine service represents another important part of our volume. A large number of our customers' machines are covered by maintenance contracts and these contribute a steady income to our company.

The steady volume shown in this country has been duplicated overseas. Our overseas sales have been showing an annual increase of about 10% which is expected to continue through this year.

The change to modern merchandising methods which has been going on in this country for the past 10 years is just getting started in foreign countries.

To make this change in merchandising possible, at least two conditions are desirable. First, transportation and parking space must be available so that a store can move outside congested areas; second, proper packaging to make customer handling of merchandise possible. It is hard for us to realize how rapidly merchandising has changed. Not too many years ago pickles and crackers were sold in barrels, butter came in tubs and you couldn't find a single drug store that sold plows!

Today, both of these elements, transportation and packaging, are present in many countries and will spread. There were over 12,000 self-service units operating in overseas countries last year. The company has encouraged this movement overseas and is in a position to take advantage of the increased demand for cash registers.

Growth conditions similar to those in the United States exist abroad for accounting machine sales as well. The increase in wage and fringe benefits which we have experienced in this country is also popular overseas and clerical costs are rising there as a result.

Our largest individual accounting machine installations are overseas: as an example, the installations in the Bank of England and the French government postal telegraph organizations.

In world-wide organizations there are always problems, but today we feel overseas business is stronger than it has been for some time . . . countries like Germany, Italy and France have shown remarkable business recovery.

CONSERVATIVE ATTITUDE MAINTAINED

Having engaged in foreign operations for many years, we take a very conservative earnings and balance sheet attitude. We do not report in our consolidated earnings the total earnings of our foreign offices, but only the amount actually remitted to the United States as royalties or dividends. Since we report as income only cash dividends received, this fact must be taken into consideration in evaluating both our earnings and sales ratios. For example, our reported earnings in 1956 were \$18,400,000 or \$2.62 per share. This includes foreign net earnings of only \$6,672,000 (the amount remitted to the United States), while

\$9,574,000 was actually shown as earnings by our foreign branches. The difference of \$2,900,000 would increase our earnings to \$3.00 per share, for comparison. This policy also affects our balance sheet where \$62,000,000 would normally be the value shown for our overseas investment, but, by deducting all accumulated unremitted earnings, our investment is shown to be only \$29,000,000.

Upon checking our position today we find both our domestic and overseas assets conservatively stated on our balance sheet and current earnings running ahead of any past period.

In looking ahead, we feel the same growth factors are present today which have made possible a steady volume increase during the past 10 years. To take advantage of this growth market, one of the most important requirements is to keep pace with the march of new products.

Today the march of new products is moving at a faster pace than ever before. While improvements are always being made to modernize our whole line, two significant changes were introduced last year: A cash register that computes change, which has had very good customer acceptance; and in the accounting machine line, a bank machine which employs mechanical and electronic principles. This machine provides, among other advantages, automatic pick-up of the previous balance. The flexibility of this machine makes it equally suitable for either large or small banks. Since its introduction about 1200 units have been sold and now represent a backlog of \$13,000,000 at around \$11,000.00 per unit.

EFFECT OF ELECTRONICS

During the last several years, the science of "electronics" has dropped right into the middle of the office equipment industry. Overnight, many boards of directors felt they would be able to buy a computer and get rid of most of their office forces. However, a much more sound appraisal is being made today. In electronics like any other revolutionary new development there is too much taken for granted on the part of the public. However, the magic of electronics has forced many businesses to spend a lot of money in an effort to determine whether or not they could use electronics.

What many businesses have found is that their present systems were badly in need of review regardless of whether or not they could eventually use electronics. They have found if present work flow and accounts were changed, mechanical equipment on the market today would make possible substantial savings. One large company decided after a survey to go to a computer-type operation because the survey showed a potential personnel saving of 200 people. In streamlining their records to get ready for the computer they were surprised to learn 72 people could be saved without the computer and they are now reviewing their decision to go ahead with almost 1/2 the potential savings already realized.

While the whole industry plus a few on the outside is working in the field of electronics we feel strength in our position. By the nature of the equipment being manufactured by different office equipment companies, the business has divided itself into logical areas. The highly repeti-

tive type business such as public utility billing, insurance billing, etc., is to a large extent done on punched cards today, while specialized bank applications and varied billing operations are usually done on other types of equipment. Our field has moved into banks, billing operations, payroll, hotels and, of course, cash registers of all types. This means that today our customers in the main are not prospects for large size computer applications. We feel that the consistent growth we have shown over the last 10 years can be supported and we will continue to grow on this broad customer base. Some of our customers, however, will convert to the use of electronic equipment and we are in a position to supply our products as input equipment for any system they may wish to use. A case in point is the Bank of America "ERMA" system, where their present National accounting machines converted to supply input information will represent a major part of their new electronic system.

We will also market a business computer which, when used with our present equipment, will represent a complete NCR electronic system. Our computer will be manufactured for us by the General Electric Company.

In addition to our present customers who will be using our equipment in their electronic systems, we believe our field of service will extend to many new customers who will find our new equipment capable of handling work usually considered outside of our present field. In this way, we will not only hold our present customers, but add a layer of new business for the future.

The company has announced its decision to use a computer developed by Elliot Brothers, Ltd. of London in connection with our overseas electronic installations. This computer is in production and available for delivery.

One of the Elliot computers is installed in our London office where customer problems are now being processed.

This equipment was offered for sale six months ago and today six systems have been sold.

CUSTOMER ATTITUDE IMPORTANT

While equipment is most important in this changing market, other factors are also significant, the customer's attitude, for example. Change is important to him. He wants to know: Are the people who are trying to sell me equipment systems experts? What is their reputation? What assurance do I have of service . . . Guarantee?

We feel the National Cash Register Company is in an enviable position on all these counts and look forward with confidence to obtaining our share of new business in this field.

Our sales organization is hard-hitting and well established in every community. It is capable of representing the company in two important parts of our business: selling and service.

Our factory and engineering organizations also have the know-how and modern equipment to produce that which our markets will require.

For many years we have sold our products outright; this today means no market obsolescence of inventories in customers' hands.

Growth seems the best expression for the future. We are building a new plant at Ithaca to house our adding ma-

chine manufacturing operation. A new plant is in the process of construction in Japan. An assembly plant is nearing completion in Brazil. A new engineering and research center is almost completed in Dayton.

Our sales last year were \$340,000,000; this year we believe they will rise to \$400,000,000. There are two factors represented in this increase. First, in 1956 we had a defense volume of \$8,000,000; in 1957 we expect this to rise to \$30,000,000. Our principal items are a bombing and navigating device and a constant speed drive mechanism to furnish AC current for aircraft. And then we expect an increase of around 10% on commercial products. While our earnings are expected to be up over last year, the same profit to sales ratio may not be maintained. Defense work does not produce the same profit margins as commercial work. Then, too, our engineering and development expense will rise from \$8,000,000 to a possible \$13,000,000 this year. The additional engineering and development is due to a stepped-up program on all fronts in our company plus the engineering work being done for us by the General Electric Company.

To finance our expanding volume of sales, we recently sold a \$28,000,000 convertible debenture issue, the proceeds of which were added to our general fund to be applied in the main for financing customer accounts receivable and inventories.

We have 7,042,609 common shares outstanding held by 16,700 stockholders. Our dividend policy has been about a 50% payout, although the current situation at each year end may alter it somewhat.

We are a Maryland corporation and hold our meetings in Baltimore. Our stockholder relations are very good. Our proxy response has always been 80% and better in favor of company proposals. We do not have the type of stockholder meetings with soft drinks and large attendance. Our meetings by comparison are very quiet. Our manufacturing facilities are modern and our employee relations are excellent.

The office equipment industry is at the beginning of a period of great development, and we believe the National Cash Register Company is in a position to play a major part in this development.



WORLD'S LARGEST CANNER

OF FRUITS AND VEGETABLES

CALIFORNIA PACKING CORPORATION

41ST ANNUAL REPORT

Consolidating financial results of Canadian Canners Limited, largest canner in the British Commonwealth and now a two-thirds owned affiliate, from acquisition date November 1, 1956, to end of our latest Fiscal Year.

FISCAL YEARS ENDED

	FEB. 28, 1957	FEB. 29, 1956
Sales	\$287,632,236	\$249,264,630
Earnings	12,602,394	11,449,003
Earnings per share*	5.65	5.14
Shareholders' equity per share*	55.89	52.29
Dividends per share*	2.05	1.55

*Based on 2,229,318 shares outstanding at Feb. 28, 1957 (after all stock dividends paid prior to that date, but not including the 5% stock dividend declared on May 2, 1957 for payment on June 11, 1957).

CURRENT ANNUAL DIVIDEND RATE \$2.20

For a copy of our Annual Report and/or a separate long-term statistical summary, address: Vice President—Finance, California Packing Corporation, 215 Fremont Street, San Francisco 19.

The Lamson & Sessions Company

GEORGE S. CASE, JR.
President, The Lamson & Sessions Co.

THE LAMSON AND SESSIONS CO. has plants in Chicago, Illinois, Birmingham, Alabama, Kent, Ohio and Cuyahoga Falls, Ohio. At the present time it is operating two plants in Cleveland but within the next few months both of the Cleveland plants will be consolidated into one operation in Brooklyn, Ohio, a suburb of Cleveland.

Most of our business is the manufacture of bolts, nuts, cotters, cap screws and allied items, all of which combine to make a complete line of industrial fasteners. The Kent Division, located in Cuyahoga Falls, Ohio, produces concrete block making machinery for its own distribution, but the major portion of its business is connected with building and reconditioning machines for not only The Lamson and Sessions Co. but also other manufacturers in the bolt and other industries.

Sales for the calendar year ended December 31, 1956 were \$39,200,000 as compared to \$38,000,000 in 1955. Of this total, our Kent Machine Division is represented by slightly less than 5%.

Our employee shareholder relationship is ordinary. Approximately 2,200 people are working with us and we have about 1,900 common shareholders, plus 750 preferred shareholders. Common shares are listed in the American Exchange. Although our total shareholders as far as figures are concerned will exceed total employees we must give weight to the fact that many employees are also owners of this corporation and they act in that dual capacity.

Roughly, our business is divided into thirds. The automobile industry and their suppliers account for one-third, while the second third is represented by wholesalers who serve the small manufacturer and the hardware retailer from whom you—and I am afraid I—buy the bolts and nuts we need. The last third, but by no means the least, is composed of all other industries, including farm equipment, airplane, construction, transportation appliances, government, export and even atomic energy.

The Lamson and Sessions Co. was born 91 years ago in the Yankee state of Connecticut where most of the bolts and nuts were made in those days. In 1869 the company moved to Cleveland where it was incorporated under the laws of the state of Ohio in 1883. Since that time the company has expanded by natural growth and several acquisitions.

The Lamson & Sessions Co. is one of the largest manufacturers in the business, both in dollar sales and tons of product. Of all of the tonnage of steel sold to the bolt and nut industry, we use around 7%. Dollar sales may represent a higher percentage, as we believe that our price per ton is higher than average. Although we cannot boast of being the largest manufacturer in our industry, we must be included in the first three or four.

Bolts and nuts are made from many materials of which steel is by far the most common. According to the Ameri-

can Wire and Steel Institute, our industry uses about 2% of the finished steel produced in this country. All of you know that bolts and nuts are also made from many non-ferrous metals such as aluminum, brass, titanium and also plastics, which indicates that our products are not limited to the use of any particular material, although steel continues to be the most important. Our industry is highly competitive, since according to our latest survey we estimate that in the United States there are about 300 other people in the business. Although our products are well standardized, you will be interested in knowing that we carry over 10,000 items in stock. Many specialty items are also manufactured in all plants, although the Ohio plants have the largest number.

Many of you gentlemen have experienced construction near your offices in which the steel was put together by rivets. I am happy to tell you that the most modern method of erecting new buildings has changed from rivets to bolts and nuts. In order to anticipate your unasked questions regarding the superiority of bolts versus rivets, I would like to mention categorically that engineers' reports definitely show that a bolted joint is able to withstand more stress and strain, either in a skyscraper or a bridge, than can be attributed to rivets.

RESEARCH

It is only fair to state that we are no different from any other up-to-date company along these lines. In our highly competitive field we are doing our utmost to outstrip our competition without going too far overboard in the matter of research. It is not practical for me to try and compare the amount we are spending percentage-wise through sales, upon research, but you may be assured that we are leaving no stones unturned in this respect. Our results to date have not been startling but we have learned much to increase sales and decrease costs. As our know-how, raw materials, and tool steels have improved, more and more different products are being made on our equipment.

An increasing population begets a growing economy. The Lamson and Sessions Co. has continued to keep up with this trend in certain respects and to be ahead of it in others.

Without going into detail, it will suffice to say that many items are today being made on our equipment that only a few years ago were made in other industries and in more expensive ways. If this meeting were being held at one of our plants, we could show you that we forge metal—mostly without applying heat—which results in using considerably less material than the process of cutting metal away. Forging is also many times faster than cutting. This evolution has been and will continue to be an important source of growth to the industry and, of course, to The Lamson & Sessions Co.

It is my pleasure to say that we are now doing a larger percentage of the bolt and nut business than we did 10 or 20 years ago. One of the reasons for our present position is due to mergers, but do not forget that a large part of the increase is due to company performance.

The Lamson & Sessions Co. foresees another opportunity to grow in the machinery line. The Kent Machine Division, which was acquired by an exchange of securities in August, 1955, adds flexibility. As a result, we are no longer dependent upon other machinery manufacturers for building and repairing equipment. The concrete block machinery and other machinery of the Kent Machine Division offers diversification in other industries.

NEW BUILDINGS AND FINANCING

The final move involving a major plan that was formulated years ago is now being executed. On Tiedeman Road, near the airport in suburban Cleveland, we have just finished erecting a 500,000 sq. ft. plant. The operations of our East 63rd Street and West 85th Street factories are in process of being moved into this new location. From the standpoint of progress, it is a pleasure to report that we will be able to produce substantially more and better products in the combined operation, although our new plant will be smaller by 100,000 sq. ft. than the combined total of the other two plants presently in operation. Machinery, equipment and personnel began to move last month. The completion is scheduled for Labor Day, after which it will take several months to "shake down" our operation.

Only a week ago we had the pleasure of holding an open house for the financial community in Chicago. We were showing off our recently completed 120,000 sq. ft. plant in suburban Bedford Park, which is not far from the 75,000 sq. ft. plant which we recently sold. The new Chicago plant has been operating since the first of the year and I am pleased to report that it is showing the manufacturing savings that we expected. More machinery is on the way into it at this time to increase its capacity and versatility.

Getting back to Cleveland, we thought it advisable to move our administrative offices to the Tiedeman Road site this year. The building is now under construction and we expect to complete the moves of our production and administrative staffs before the end of the calendar year 1957. Without being overly optimistic we believe that due to the modernization of the plant and equipment, savings amounting to between \$1,250,000 and \$2,000,000 per year will be effected. The reason for this estimate is my confidence that moving into our new plant will result in one of the lowest cost operations of this type of business in the country.

The sale of our East 63rd Street plant will show a loss on our books of \$190,000 before taxes. The West 85th Street plant is now for sale.

The cost of these moves and the streamlining of facilities, done during 1955, 1956 and 1957, will exceed our depreciation by \$8,000,000. The estimated depreciation is about \$3,000,000. The sale of our Cleveland properties will realize approximately \$1,000,000. Appreciating the fact that we have already been paid for our Chicago plant, our net investment will be \$7,000,000.

\$7,000,000 is a lot of money and we expect to realize a substantial return on it.

For example, savings in the amount of \$100,000 a month or \$1,200,000 a year before taxes are expected from our new buildings and production methods. Spelling out the manner and extent of our anticipated savings, you understand that a fair amount of this is automatic because of the need for less guards, no firemen, less cafeteria help, no intra-city trucking, lower maintenance costs, etc.

Additional reduced production costs will come from such things as less and better supervision, easier production control, less material handling and better flow of materials through our new plants, more automatic machinery, etc. These will bring about additional savings of at least \$50,000 a month or \$600,000 a year at our present level of business. More equipment will also provide additional capacity that has long been needed to increase our sales and profits.

During this portion of my discussion with you gentlemen you will undoubtedly be wondering when our management believes that a major portion of the savings about which I have been speaking will show up in earnings. Every effort is naturally being made to capitalize upon whatever savings can be realized in 1957, but we all know that moving expenses are heavy. We think that \$720,000 will cover our Cleveland move. Some savings can be expected in 1957, but it will be 1958 before all savings will be reflected in earnings.

The material you have before you which includes the 1956 annual report, calls your attention to 56,000 shares of outstanding Convertible Preferred Stock which, when conversion privileges are exercised, will increase the presently outstanding Common Shares by about 95,000 shares, to a total of 575,000 shares. Despite this anticipated dilution, I personally believe our per share earning will materially increase in 1958.

Security analysts in various sections of the country have from time to time queried me with respect to our dividend pay-out policy. Your records show that we have for many years averaged substantially below 40%. I expect this policy will be more liberal in the future than it has been in the past, particularly after our expected savings show up in earnings.

LOOKING AHEAD

Referring to my previous remarks, you will recall that I have outlined an expectancy of The Lamson & Sessions Co., as well as the industry, to continue to grow through the increased use of product and the development of additional products that can be economically manufactured on our equipment, regardless of whether they are made of metals, plastics or other materials. I believe that we should experience an expansion to the extent of at least 25% more product by 1965. Nor are future acquisitions out of the picture.

Analyzing the savings projected in our manufacturing cost and anticipated expanded business, it would seem reasonable to expect that our margin of profit would materially increase. It is common knowledge, however, that our competitors are doing many of the things we are doing. Statis-

Now for the immediate future. Our 1956 results and first quarter earnings have been given to you. Although our earnings for the first quarter of 1957 were slightly better than those for the 1956 quarter in spite of an appropriation for moving expenses, our orders do not indicate that the second quarter will result in the continuance of earnings at

In general, we are looking forward to a bright future for the American economy, our industry and for The Lamson & Sessions Co.

MANUFACTURER of
ELECTRICAL WIRES & CABLES
CONDUIT
CABLE TROUGH

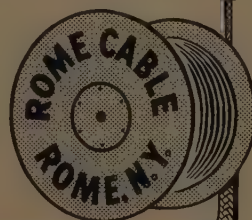
—Five Year Averages—

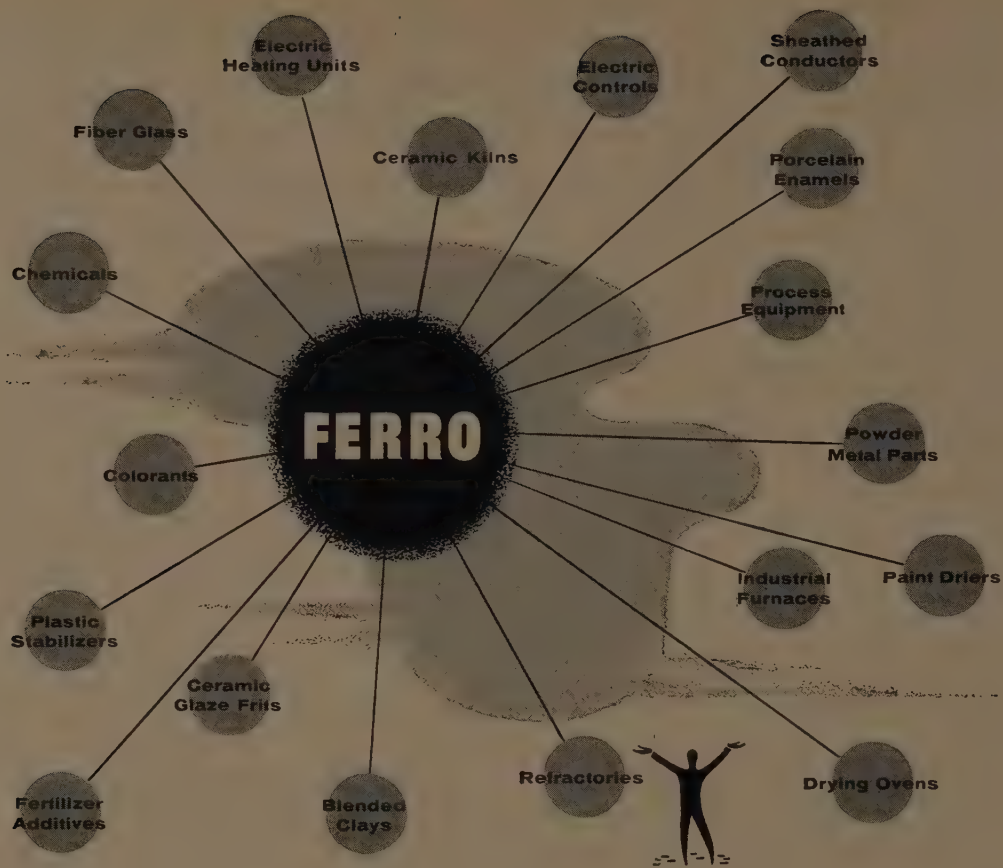
	Year Ended March 31, 1957	Years Ended March 31, 1956	1951
Net Sales	\$52,790,000	\$47,518,000	\$24,895,000
Net Earnings	2,256,000	1,671,000	1,170,000
For use in the business, to provide improvements	1,480,000	1,008,000	818,000
Net Earnings per Common Share	\$4.04*	\$2.99	\$2.09
Cash Dividends per Common Share	1.40	1.19	.63
Share Owners' Equity per Common Share	28.79	23.71	15.30

Sales Offices and Stock Distribution Centers in Principal Cities

ROME CABLE

C O R P O R A T I O N





*** CONDENSED CONSOLIDATED BALANCE SHEET AS OF DECEMBER 31, 1956**

ASSETS		LIABILITIES	
Cash & Government Securities	\$ 2,372,177	Current Liabilities	\$10,999,966
Notes & Accounts Receivable	8,663,754	Long-Term Liabilities	
Inventories	12,642,208	Due After 1957	7,412,013
Prepaid Expense	670,563	Other Liabilities & Reserves	211,447
Current Assets	\$24,348,702	Shareholders' Equity	21,526,839
Other Assets, Including Investments, Property, Etc.	15,801,563		\$40,150,265
	\$40,150,265		

* Annual Report, Just Released, Is Available on Request



FERRO CORPORATION

4150 EAST 56TH ST. • CLEVELAND 5, OHIO

The Ferro Story

R. A. WEAVER

Chairman, Ferro Corporation

MANY OF THOSE PRESENT TODAY have heard parts of the Ferro Story, but I would like to bring it up to date and also to share with you my views of our future.

Although our business philosophy is built on continuous growth, we believe today we have sufficient diversification so we can count on gradually producing a wide variety of new products without the acquisition of more new companies or without very great additional capital expenditures. This does not arbitrarily rule out the acquisition of new companies, but it does indicate that at present we believe our best interest will be best served by spending our time and money in developing the really good prospects we have in our current group of companies.

Someone has said you can only judge the future by the past, and if that is the case I would like to refer once again to our growth in the last twenty years. In 1936 our sales were \$3,533,000; by 1946 they had jumped to \$19,416,000; and in 1956 they amounted to \$54,507,000. Recognizing that the next decade promises to be one of expansion in population and industry both here and abroad, we think the past progress and the immediate prospects of Ferro are such that we can look forward to sales of \$75,000,000 by 1966.

With that volume it is our opinion that we can improve our profit margins and fulfill the high hopes our management has had for the development of an unusually profitable business.

Currently we are operating 27 different factories, divisions, or subsidiaries, and are serving fifteen different major markets. We are quite sure we can increase the number of the major markets with some of our new products. Our earnings for 1956 and for at least the first half of 1957 have been down somewhat because of higher cost of wages, transportation, and materials we had to purchase. On June 1 we have a modest price advance in our principal product which will be helpful in correcting that situation. Probably equally important in the reduced earnings picture was the extra expense which is always incident to any heavy capital program, and for Ferro we have had a heavy capital program. This situation is expected to correct itself as the new products and the new equipment are put to efficient use. It is our idea that we will arrive at that situation during the latter part of this year.

I believe it would be more interesting to you to have some of our men from top management speak to you on different phases of our business, so I will introduce Mr. Clawson, President; Mr. Marks, Executive Vice President; Mr. Weber, Vice President and Treasurer; Mr. Andrews, Vice President in Charge of Foreign Operations; and Ralph Bevis, Director of the Research and Development Departments. They will each speak briefly on different phases of our business.

I am pleased to introduce Mr. Clawson, who will be the first speaker.

Mr. C. D. Clawson, President, then made the following statement:

Ferro Corporation had its beginning as a supplier of Porcelain Enamel Frits to the home appliance industry. Later we added engineering services, color oxides and glaze frits, especially for the clayware fields of wall tile, dinner ware, etc.

This group of businesses are very closely related, both from the standpoint of technical know-how required, as well as similarity of markets. They represent the foundation of the corporation, and consequently the largest source of sales and income.

Since almost every one of the end products of this group can be found in your homes it is understandable that the greatest common denominator is building starts in America. In foreign companies this is not necessarily true. The great bulk of the customers abroad are to be found in the rapidly growing middle classes, and sales do not always reflect the home building curves. They are more inclined to follow the prosperity of the country and consumer credit restrictions.

Here in America we are suffering currently from a combination of ills. The most important, of course, is the downward trend of housing starts, and the increasing trend toward more credit restrictions. Added to these depressing influences is the current crop of price wars within the major appliance field.

Against this not too pleasant background there are many bright spots showing. First is the increased acceptance of porcelain enamel as the best finish for home appliances. For example, automatic laundry equipment of all sorts is being changed from synthetic finishes to porcelain enamel. In the near future lower firing porcelain will have a profound effect on other important items, such as: refrigerator exteriors, air conditioners, under-sink cabinets, etc. Second are some entirely new uses, and I will mention only a few as examples:

Pressed Steel Sanitary Ware (bath tubs, sinks and lavatories). This market has had a strong and steady growth during the past ten years, until today it is one of our most important outlets.

The Architectural Porcelain Field is an important and well-established new use. Literally tens of thousands of all-porcelain filling stations have been built in the past few years. Multi-storied, monumental type of buildings using Curtain Wall construction are being built throughout the country. Schools, hospitals, laboratories are very common users of this product; in fact, any structure where lightweight, color, cleanliness, and permanence are desirable, will be ultimate users of this new building material. It

is estimated that this market will continue to grow for some time at a rate of 15 to 20% per year. If these estimates are correct, and I believe they are, porcelain enamel sales for architectural use will equal about one-third of our present total volume.

F.T.E. (Fritted Trace Elements) is another interesting new product with a very large potential. This material, which is an additive to standard fertilizers, has had several years of exhaustive field tests. It is now accepted as a very desirable product in many sections of our country. In 1956 we sold approximately 500,000 lbs. In 1957 our first quarter sales slightly exceeded this figure.

In closing my remarks, I wish to emphasize the advantage of this well integrated group of Ferro enterprises—engineering, frit, glaze & color oxides. It is a complete service available to our customers, and permits Ferro's interest in anything from the building of the plant through to its successful operation.

Admittedly, our major concerns at the moment are home building and the appliance industry. The former is somewhat in the lap of the Gods at the moment. If family formation curves are even approximately accurate this situation will be automatically corrected by late 1958. As far as the latter is concerned we are confident that the second half will see improved and stabilized conditions.

Mr. Weaver then introduced Mr. H. T. Marks, Executive Vice President, who presented the following information:

It is well known that any heavy capital program involving new process developments is subject to high start-up charges.

Possibly more than any other time in its history, Ferro has felt the impact of starting-up charges upon its profits during recent months. Our fiber glass operation is perhaps the best example of this situation.

About a year and a half ago, after a very extensive study, our Board authorized a major program of expansion for our Fiber Glass Division.

This program which is within a few short weeks of being completed entails an expenditure of around \$1,600,000, and involves three major undertakings.

We have increased the bushings from 16 to 47 which approximately triples our roving output. Each bushing produces about 10,000 pounds of fiber per month and costs about \$25,000.

We have set up a textile department to make woven rovings and industrial glass cloth. With this textile department we have achieved, to our knowledge, the first completely integrated—from raw material to finished cloth—glass cloth operation in the world.

A third major item has been the installation of a large glass furnace to make our own marbles. Up to now we have been buying our marbles from one of our competitors but with our present rate of production, we find that we can now make them cheaper than we can buy them.

A final item was the construction of a new, larger and more efficient mat machine for our Nashville plant. Our other machine has been shipped to our new plant on the West Coast.

All of these undertakings not only take thousands of man hours in engineering, which are charged against operations, but also involve a large amount of non-productive labor.

For example, we have averaged during the first four months of this year, a total of 50 workers including supervisors from which nothing productive or profitable has come.

It takes about 30-days to "fill the pipelines" so to speak in making textiles. We have currently 40 persons working in the textile department and no quantity of cloth is yet ready for sale.

Our glass tank has been hot for a month now consuming quantities of gas and using the efforts of 30 persons. Just this week, we expect that the department will be producing its first usable marbles and thus start paying for itself.

All this goes to explain why in the midst of a record quarter of sales in our Fiber Glass Division, and with excellent production and efficiency in our regular line of products, we find our profits substantially down in this division for the first quarter.

However, by June we hope to have all of these start-up expenses behind us, and with high level sales we are now enjoying and the decreased costs permitted by our expanded operations, the second half of the year should show a fine increase in profit from our Fiber Glass Division.

There is a similarity to the fiber glass situation at our T&K plant. Since early in 1956 we have been engineering the Jetube (thin tube) type of unit as an addition to our Monotube line.

Here again, we have been involved in thousands of engineering hours, and a considerable start-up expense.

Another expansion—this by way of acquisition—has been responsible for some erosion of our profit margins during the first quarter, despite the fact that sales continued at a satisfactory level.

This was the case of The Patterson Foundry & Machine Company, which we acquired last October. Sales have been well maintained but increases in labor and material costs on orders outstanding on the books have cut into our margins during the first quarter.

Price increases have now been put into effect, and economies in organization and manufacturing effected which should result in a much better profit ratio in the ensuing months of this year.

Mr. Weber, Vice President and Treasurer, followed Mr. Marks and spoke as follows:

On a domestic consolidated basis our ratio of current assets to current liabilities at March 31, 1957 was 2.5:1 against 2.4:1 as of December 31, 1956. Since January 1 of this year, our cash and inventories have increased slightly while our receivables have dropped about 13%, over \$600,000. On the liability side Notes Payable have increased by \$1 million, and our other payables have decreased by \$1,123,000.

During the first quarter of this year we increased our borrowing under the revolving credit arrangement by \$1,100,000 which brings our total borrowing up to \$1,800,000 at the present time. We believe our borrowing for the bal-

ance of this year will remain at approximately the same level.

Due to our expansion projects during 1956, our expenditures for plant and equipment reached an all-time high for any one year. During 1957 such expenditures will level out, but because of the carry-over from 1956 our capital investment this year will probably exceed by about one-half million dollars our annual domestic depreciation of approximately \$900,000. Since the first of this year our cash expenditures have added approximately \$500,000 to our domestic consolidated plant and equipment account.

Most of our domestic operations have already been highlighted. To complete our domestic picture we must include our refractories operations, Ferro Chemical Corporation, and our powdered metals plant.

Our three refractory plants in Crooksville and East Liverpool, Ohio, and Tyler, Texas should produce sales for 1957 of approximately \$3 million with good results expected. Markets covered by these refractory plants include the dinnerware, wall and floor tile, foundry, electronic, insulator, domestic and industrial gas heating, and miscellaneous ceramic fields.

Sales of our Ferro Chemical subsidiary in Bedford, Ohio are estimated at about \$2,200,000 for 1957. Their research and development facilities have been expanded due to new product activities. They produce stabilizers for the plastic field, driers for the paint and printing ink industries, fungicides for the wood treating and textile fields, and also supply the lubrication and agricultural markets.

At Salem, Indiana our powdered metals plant should produce sales of about \$1 million for 1957. With improved engineering and our entry into high-density, heavy-duty applications in powdered metallurgy, this operation is making much better progress in a growing, competitive field. They supply products to the automotive, farm implement, appliance and hardware markets.

Mr. Andrews, Vice President, then made the following statement:

This is the 30th anniversary of Ferro's International operations. From a very humble beginning in Canada in 1927 Ferro International has grown until we now have manufacturing plants operating in eleven widely spread countries. Eight companies are wholly owned. Ferro plants are located in Argentina, Australia, Brazil, Chile, Canada, England, France, Holland, Japan, Mexico and South Africa.

Seven of these companies started manufacturing operations before the start of World War II in 1939. During this pre-war period our efforts were primarily directed toward developing markets for our products and generating funds for future expansion.

The real growth of our overseas companies started in 1947. There, of course, was a big pent up demand for consumer goods after the war and industries all over the world were faced with problems of converting from war production. Ferro played an important role in this conversion. Our engineering and technical departments provided layouts, equipment design, and technique so that ceramic and enameling plants could resume manufacturing using the most up-to-date equipment and manufacturing processes.

This policy or "philosophy of doing business" has contributed a great deal to the profitable growth of Ferro International.

Since 1947 consolidated sales and net profits have tripled. Unfortunately time does not allow me to give you the detailed story of the growth of the individual companies during that period. In many cases it is more spectacular than the consolidated figures indicate. However, I would like to mention in passing that the most interesting growth occurred in Latin America and in Holland. As an indication of Ferro-Brazil's increased activity sales of "frit," our principal product, increased from 2 million pounds in 1947 to 18 million pounds in 1956. Holland is our largest overseas plant and to give you an idea of its size their production is exported to 25 different countries.

The profitability of Ferro International can be judged by noting the "return on investment." I would like to call your attention to this figure of \$1,037,000 on the chart. This is the total amount of the parent company's dollar investment in all Ferro International companies to date. Keeping this figure in mind please note the consolidated net profits earned in 1955 and 1956. These annual profits, which were slightly in excess of 1 million dollars, are approximately equal to the total parent company investment. In other words our yearly profits from Ferro International are nearly equal to the original dollar investment. Total net profits earned in the 10 year period from 1947 until 1956 were \$9,218,000, or nearly 9 times the total dollar investment in our International operations. In this same period \$4,920,000 have been received in U. S. dollars from dividends, royalties and service fees. As you will notice on the chart consolidated net worth of Ferro International as of October 31, 1956 was \$6,543,000. Consolidated earnings to net worth were approximately 22%.

Prospects for the future are extremely bright. Those of us who are closely associated with Ferro's foreign operations are very enthusiastic about our foreign business in the years ahead. However, before discussing these future possibilities I would like to mention that first quarter results of this year indicate that 1957 will be better than 1956. Sales for the first quarter were 16% ahead of last year. We have forecasted that consolidated net profits for 1957 will be 10% higher than 1956 and that we have every reason to believe that this forecast will be met. We further estimate that dividends remitted in dollars by our foreign companies in 1957 will be 25% higher than last year.

We also continue to explore market possibilities in the areas of the world in which we are not now manufacturing. One of the areas that looks very interesting is Hong Kong and the Far East. Last year we established a sales office and a customer service laboratory in Hong Kong to serve the ceramic industry in the Far East. The market potential for our products in this area is great and we intend to develop these possibilities.

Ferro International plays an important role in the diversification program of the Corporation. The companies located in 11 different countries serve as a "leveler" in the U. S. business cycle. With such wide spread interests many soft spots arising in domestic markets may be counteracted by a healthy foreign business. It is fortunate that Ferro

years ago had the foresight and the courage to embark on a world-wide manufacturing program.

Mr. Weaver then introduced Mr. R. E. Bevis, Director of Research, who spoke as follows:

Ferro Corporation research and development policy parallels closely its overall management policy of a high degree of autonomy in the management of operating divisions and subsidiaries, coupled to a degree of policy supervision and assistance from corporate management. Ceramic research activities are centralized in the Technical Center in Cleveland, while product development activities are decentralized and under the responsibility of operating subsidiary and division management. It is our belief that such a division of functions provides the greatest degree of effectiveness from our research and development activities, and at the same time provides the operating subsidiaries and divisions with the flexibility of emphasis which is required to adapt one's efforts to rapidly changing conditions in products and markets.

Approximately 77% of Ferro Corp. consolidated domestic and International sales in the year 1956, excluding engineering divisions, were of ceramic products for which research activities are centralized in the Technical Center.

The most important function of the Ceramic Research group is that of providing fundamental information concerning present day products and processes for application by operating subsidiaries and divisions in their program of improvement of existing products and development of new products. The research problems of the Ceramic Research group therefore are principally those of a relatively long range nature, whereas problems of the product development laboratories are those of a more immediate nature.

The second important function of the Ceramic Research group is to coordinate the efforts of all autonomous product development laboratories, to keep them advised of progress in all the various Corporation laboratories, to help them apply techniques and information developed in one product line to other lines, and to keep management informed and advised concerning related problems of research and development.

A third function of the Ceramic Research organization is that of investigating and providing fundamental information concerning new product ideas, and to develop such ideas to the point where they can be conveniently transferred to individual product development laboratories or to

new groups which may be formed to handle commercial development of new products not following existing product lines.

Approximately 10% of Ferro Corporation personnel is employed in research and development and related supporting activities. Expenditures on such activities in the fiscal year 1956 totaled over \$1,413,000, representing 3.7% of consolidated domestic sales for that same period. The research and development budget for the year 1957 is slightly larger than for the year 1956.

More than half of the products currently sold by Ferro Corporation either were not being manufactured ten years ago, or are of a basically new nature since that time. Of the remainder, practically all are improved versions of those products being manufactured at that time.

One of the most exciting potentials for the porcelain enameling industry today is the recent rapid advancement which has been made toward the possibility of commercially acceptable low temperature enamels. The science of porcelain enameling on metals involves heating the enameled metal structure to a temperature at which the porcelain enamel coating will melt and bond to the metal base. Prior to 1947 enameling temperatures commonly employed were in the range of 1500 to 1580 deg. F. Enameling temperatures being employed today for the enameling of sheet iron go as low as 1400 deg.

The importance of the enameling temperature resides in the fact that sheet steel tends to deform under its own weight at temperatures greater than 1300 deg. F.

A recent survey estimates that approximately 400,000,000 square feet of home appliances finished in organic coatings were sold in 1956. This survey covered only appliances such as clothes dryers, home freezers, ironers, undersink cabinets, refrigerators and washing machines. Such a surface area to be coated presents a potential annual market of over 50,000,000 pounds of porcelain enamel frits. Additional markets in the finishing of other items such as circulating heaters, architectural finishes, room air conditioners, and many others of equal potential would be opened to porcelain enamels by the successful development of these low temperature enamels.

Research and development activities in the Frit Division of Ferro Corporation have been directed toward this goal for the past several years, and especially so in the past two years. Significant advancement has been made and we believe that ultimate success now is in sight.



73rd Consecutive Dividend

The Board of Directors of Rome Cable Corporation has declared consecutive Dividend No. 73 for 35 cents per share on the Common Capital Stock of the Corporation, payable June 28, 1957, to holders of record at the close of business on June 14, 1957.

GERARD A. WEISS, Secretary
Rome, N. Y., May 9, 1957

The DIAMOND MATCH COMPANY

76th CONSECUTIVE YEAR
OF DIVIDENDS

The Board of Directors of The Diamond Match Company on June 27, 1957, declared a regular quarterly dividend of 45c per share on the Common Stock. At the same meeting the Board also declared a quarterly dividend of 37½c per share on the \$1.50 Cumulative Preferred Stock.

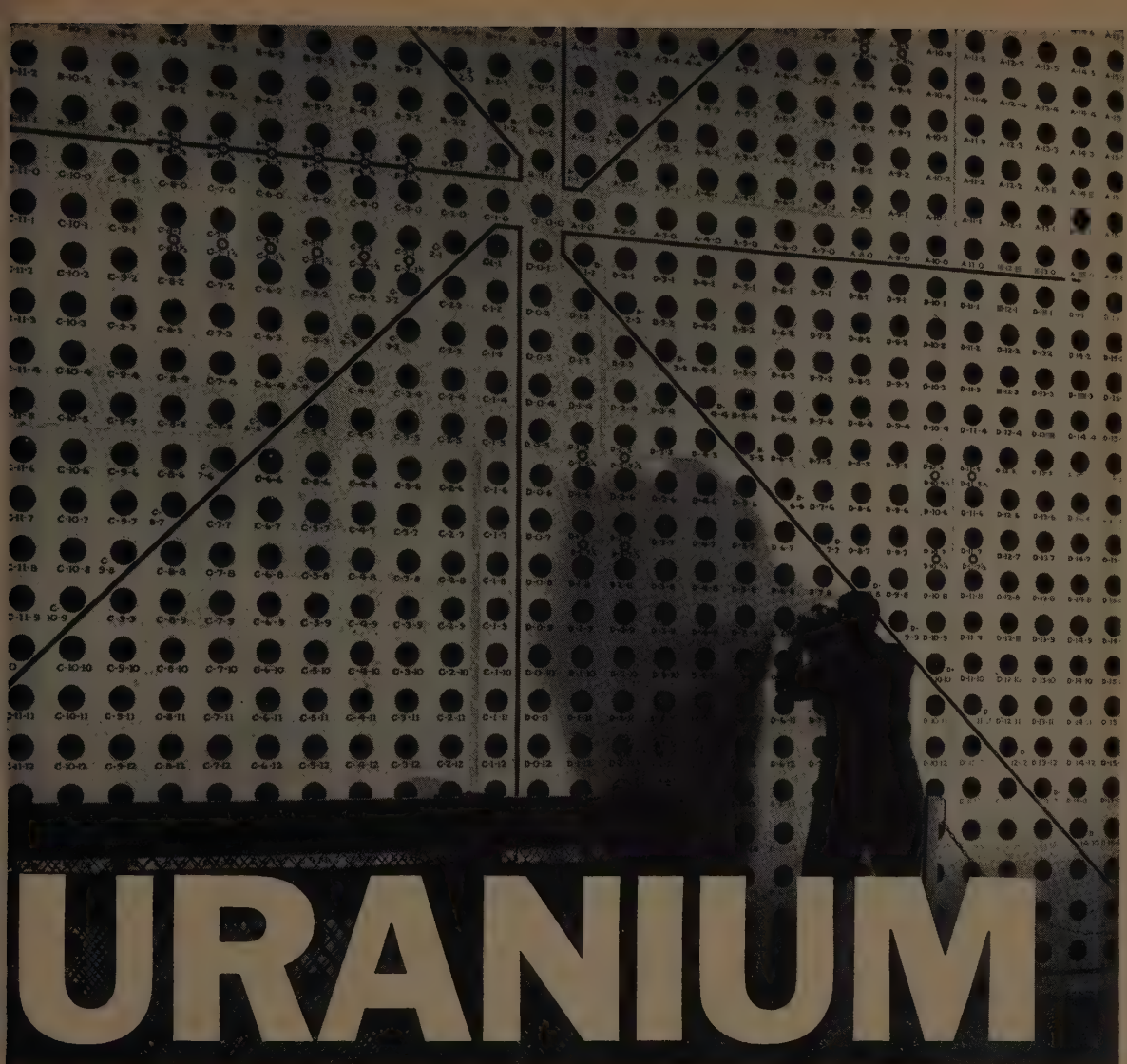
Both dividends are payable August 1, 1957, to stockholders of record July 8, 1957.

PERRY S. WOODBURY, Secretary and Treasurer



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and the giant punch board

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While these man-made radioactive materials have been available for only a short time in commercial quantities, they have already found a wide range of uses—in industry, in agriculture and in medicine where radioisotopes have practically replaced radium in the treatment of cancer.

Every day new uses are being found for uranium in nuclear power developments. To meet these present and future needs, Anaconda has developed reserves of millions of tons of uranium ore. These reserves, together with new ore processing methods pioneered

by Anaconda at its Bluewater, New Mexico plant, have made Anaconda America's leading producer of uranium concentrate.

Other Anaconda products are also contributing to the expanding use of nuclear energy. Many are used in the actual production of radioisotopes, while lead—another metal produced in large quantity by Anaconda—is employed as radiation shielding wherever radioactive material is present.

Anaconda's role in nuclear energy is typical of the way in which its extensive line of non-ferrous metals and metal products—the broadest combination offered industry today—is contributing to America's growth and progress.

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for all but the most
critical of today's engines



Good Gulf

that famous
high-value gasoline



"STOCK MARKET" DINNER

The Outlook for the Stock Market

A. HAMILTON BOLTON

Partner, Bolton, Tremblay and Company, Investment Consultants

A LITTLE OVER A YEAR AGO, I was fortunate enough to be asked to speak to members of the Boston Economic Club. I would like you to throw your minds back to that time in January 1956. We had recently suffered from the shock of the Eisenhower heart attack and in terms of the Dow Jones Industrial Averages, we were hovering around 475, (not too far from the index level of today in fact, and very close to the all-time peak which had just been established in September of 1955 at about 490). At that time I made the following statement:

"If I were to base all my 'forecast' on the banking approach, I would conclude that the general environment is becoming less and less satisfactory, and therefore the stock market should not go higher. In actual fact, however, I believe the technical situation is still terrifically strong . . . it may take several months yet to upset this picture. . . . I arrive intuitively at a forecast of a peak in late 1st quarter or early 2nd quarter of 1956 of 540 DJIA plus or minus 5%, and a slow decline to the end of 1956 or first quarter of 1957 to 435 DJIA plus or minus 5%."

Actually events have confirmed some of the general validity of the argument, but in doing so have also reconciled certain doubts that I had at that time concerning the longer term outlook. I think this is a very important point, and one which is continually in the process of evolution in the mind of anyone who attempts to reason out the future from what is going on in the present and what has gone on in the past.

In this talk in Boston, I asked the question "will 1956 be a long-term peak in the stock market", and came to the conclusion that there was "an environment in 1956 which could lead to a gradual reappraisal of the outlook of many of our growth stock and capital goods companies investment-wise." In other words, I was leaning toward the idea that the coming stock market peak might well be one comparable to, let us say, the peak in 1937.

1956 NOT A LONG-TERM MARKET PEAK

I may say at this point in 1957 that I have considerably changed my mind as to the probability that 1956 will stand out as an important long-term peak comparable to 1937. I frankly think it quite unlikely now, but much of this change of heart or mind is due not to what could have been

foreseen, at least by me, a year ago, but rather to what has happened since.

With only 10 to 12 minutes at my disposal, obviously I am not going to be able to do more than touch a few high spots. For this reason, I have had a number of charts prepared and distributed to your tables, for in doing so I am sure that I will be able to cut down on your time as well as my own in putting over my thesis.

As I see it, again looking back to the winter of 1956, there was grave danger of a take-off by the market into the stratosphere. Those who know me know that I am a conservative at heart, therefore when I put a figure down of 540 for the DJIA, I was basing myself on a rational target. If I had felt that 522 was going to be the top I would have said 520 or 525. Of course I hedged like all good investment men with plus or minus 5%. But the facts are that my conservative target was 540. And this is point number one in my reappraisal a year later. Instead of producing a final frothy top so familiar in other new era stock markets of yesteryear, the whole thing petered out in April 1956, with a subsequent double-top in August.

TOO LONG TURNAROUND

Point number two is that history provides no examples that I can find wherein the investing public has been given such a splendid opportunity to get out before a major bear market onslaught, as the investing public has had in the rallies from May 1956, October 1956, November 1956, and February 1957, and wherein the market subsequently crashed to extreme lows thereafter. Thus I am forced to the conclusion that the present consolidation since 1956 is going to be typical of long consolidations in 1946-49, and 1951-53, and not typical of the termination of a major bull market of historic dimensions such as 1937, let alone 1929. By extreme bear market I have in mind one which exceeds a 40-50% retracement of the prior advance. In this case the halfway mark would be 389 and the 40% mark 415 DJIA.

The failure of the market in early 1957 to break well below the 455 level after 9 solid months from the top should give pause to anyone who expects to see the Industrials below the 400 mark. True it is quite probable that the present rally is technically considerably weaker than it looks as I shall point out in due course by reference to certain technical standards, yet the market is currently so

selective (as in 1951-53) that it is doubtful if a 70 point drop, say in the Averages, would necessarily at this point cause a great deal of harm to the nation's investment portfolios.

PRIMARILY A MONETARY MATTER

What then is the basis of this bear market failure, one year or more later? I believe it is primarily a monetary matter, a matter of money and credit to which too little attention is paid by analysts. Tight money has not caused the trouble expected, and there are good reasons for believing, almost regardless of what happens to the stock market in the next year or two, that the long post-war bull market, even 8 years later, is not over yet, and may in fact be beginning to build up the steam for its most dynamic phase. "What is your evidence, boy?" As I said it is primarily monetary.

This is a "new era" stock market. Any stock market that breaks through old highs made a generation back and stays through is a new era stock market. It started in 1949 because by then the economy had, as a result of World War II, built up a unique set of monetary conditions never before encountered in the United States. These conditions were fairly simple.

1. The lowest private debt structure in U.S. history, coupled with
2. The highest level of Money Supply substantially represented by government debt monetized into the banking system.

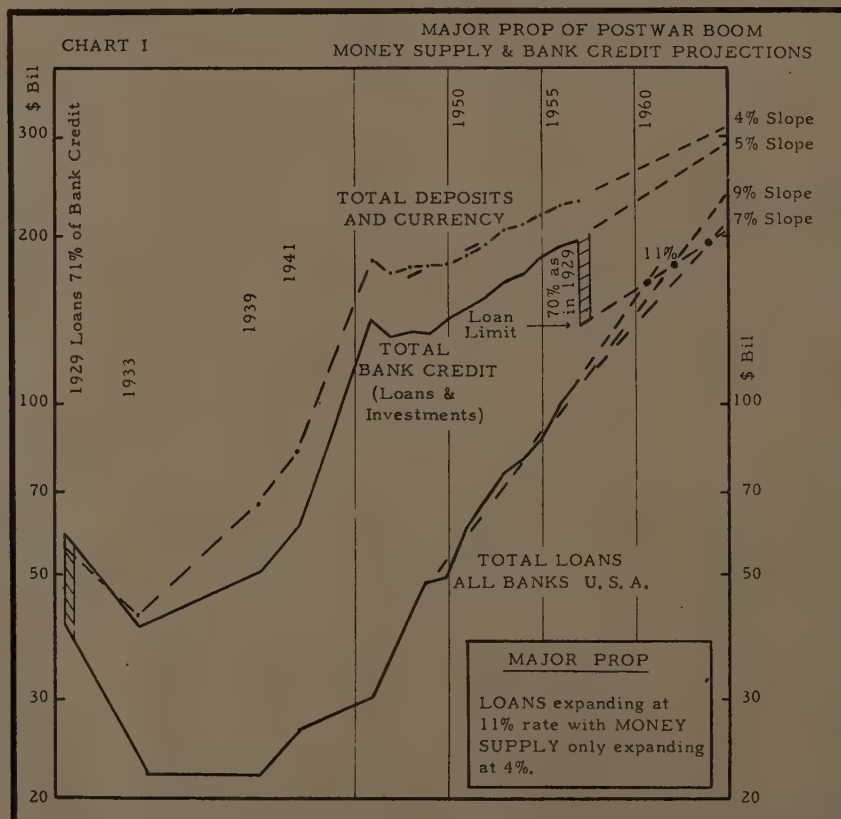
resented by government debt monetized into the banking system.

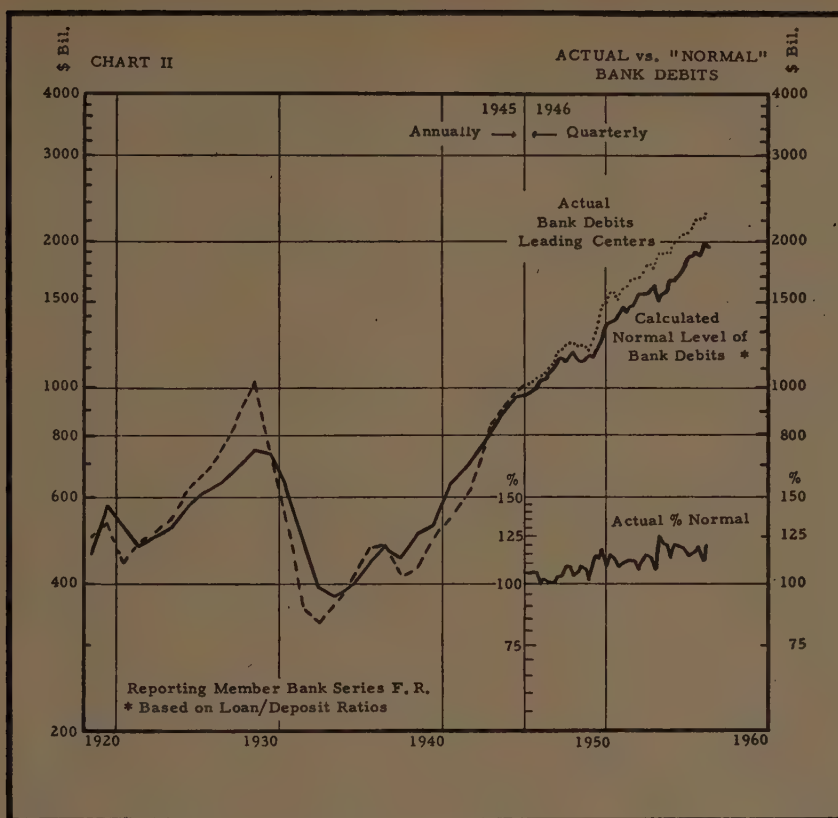
NO DEPRESSION IMMINENT

Without these conditions I am convinced this boom would have been over by now, and we would have been in or through a major post-war depression at this time. I am equally convinced that because of these conditions we do not at the present time face a post-war depression. If this is correct, we will not, either, have a major bear market in stocks.

Chart I shows the pattern since 1929. In 1929 loans were 70% of bank credit (loans and investments). In 1945 they had dropped to 22%. In absolute terms they were still far below 1929 levels, but money supply was some 3 times 1929 levels. The whole post-war boom has been fed on that sharp (approximately 11% per annum) rise that you see in total loans. Without this trend the magnitude and length of the boom would not have been possible.

The Commercial & Financial Chronicle reports on a recent speech by Dr. Paul McCracken, a member of the President's Economic Council, in which he indicates the need for an increase of \$100 billion in Money Supply in 1965 to keep the economy rolling. It does not appear to me from this chart that the need will be that great. I think it is conceivable that by reducing reserve requirements at opportune moments the trend of bank loans can continue





up at 9, 10, or 11% without forcing a very large increase in the rate of increase of money supply.

At all events it is quite clear that given the conditions necessary where pump-priming could be done without fanning inflationary fires, and I will come to this in a minute, the boom can and will be prolonged.

Chart II provides another and more day-to-day index of how the economy is faring. I cannot go into it too much here, except to say that it is based on the fact that borrowed money turns over faster than other types. By correlating the percentage of demand deposits created by loans, and the turnover of demand deposits, one arrives at a normal turnover figure which one can compare with the actual. The actual in all the period from 1919 to date has fluctuated above and below normal exactly in accordance with the business cycle and the stock market, as Chart II shows, including the boom of the 20's, the depression 30's, the slump in '37, etc. The main point here is that in all the post-war period, based on this correlation, the turnover of money has been in excess of what would be considered normal at any actual level of bank loans even though these are rising rapidly. We had slow-downs in 1948-49, in 1951-53, and in 1956-57, but in none of them do you find the type of fall-off in activity which characterized 1936-37, let alone 1930-32.

What this really indicates is that despite the rise in bank debt which has been a source of worry to many, the economy generally is continuing to outstrip the debt situa-

tion on an over-all basis. Until we get a sharp drop in this index, I do not look for much more than minor recessions which cannot be too harmful to stock prices.

The major question, it seems to me, is how can we reconcile a continuing rising debt situation with a stable non-inflationary price level. Can it happen? The answer, I believe, is fairly simple. Despite fairly rapidly expanding debt the price level is now stabilized and at least in sensitive commodities is moving downward. I believe that Federal Reserve Policy which currently is passively tight is taking its cues primarily from (a) the price level (b) the employment situation. It may well be that a slackening off in business coupled with the tremendous physical increases in industrial capacity which in themselves have been greatly responsible for the inflationary pressures will be enough to hold down prices and thereby enable if not encourage an easier money policy. Further any sizeable increase in unemployment will certainly be the signal for a second look at passive tight money. 1957 and 1958 may well produce then the atmosphere in which easy money is again to the fore, and you can be sure that the Treasury will not be likely to object either. (This would be similar in some ways to 1954, I think).

Again, if instead of a producers' boom, we move into a different environment whereby we have a consumers' boom, and possibly a whing-ding of a stock market boom, then, as in the 1920's, with the post-war capacity that has been built up we could envisage a climate in which prices would

be quite stable and non-inflationary. This then I think is what we have to watch for, summarized as follows:

(1) A restocked-up credit boiler as in 1949 and again in 1953, caused by some loan liquidation not accompanied by falling business.

(2) A stable price level.

(3) Some pressure off full employment, i.e., a looser employment situation.

(4) A tremendous psychological impact from the fact that this would be the 3rd post-war depression we had avoided by essentially monetary and credit means.

You all can imagine the stock market ammunition that this set of circumstances would provide.

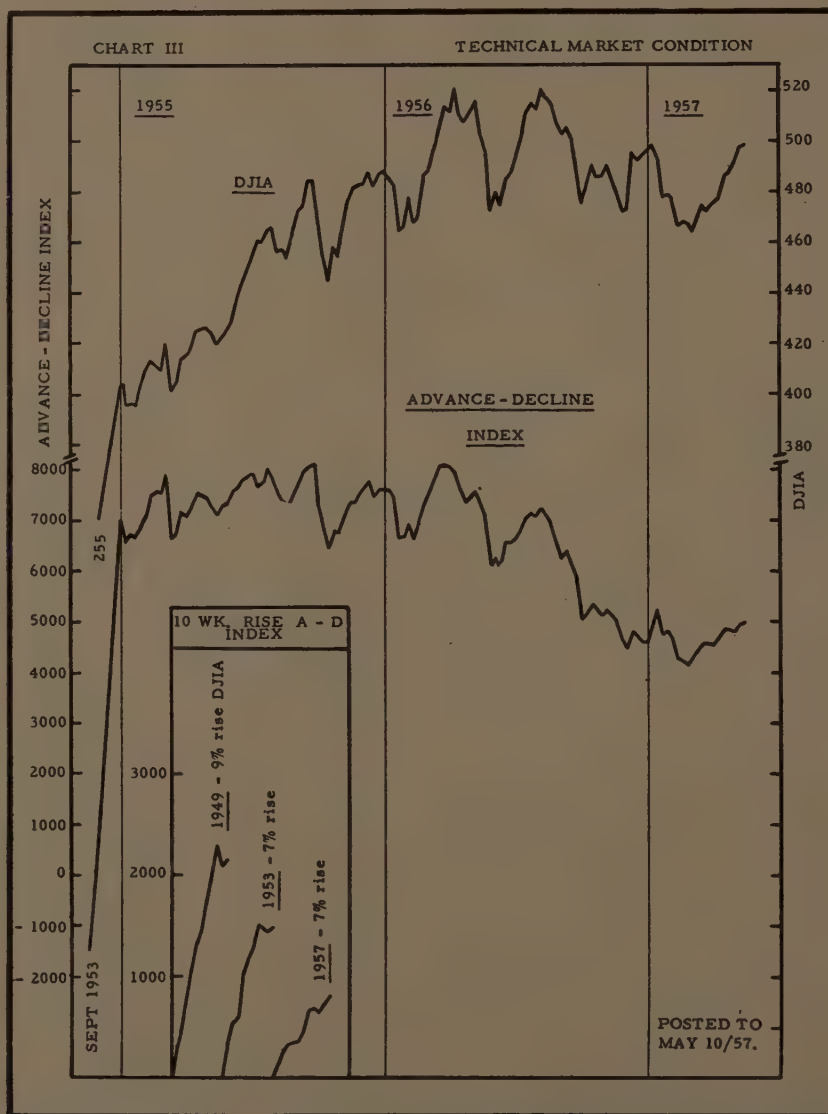
Coming down now to the more immediate outlook, the rise in the stock market since February has caused a con-

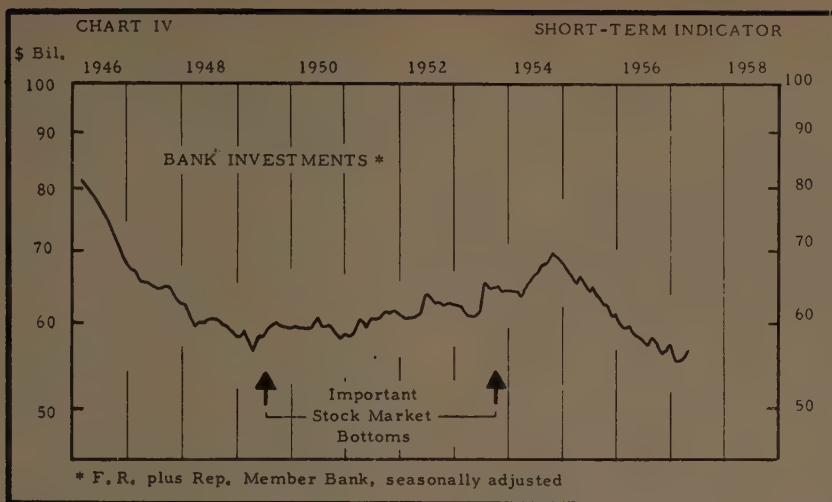
siderable change in professional thought. In a talk I gave on this subject in November last, I underlined the generally bearish professional opinion at that time as a favorable factor in a number that were not so good, to quote:

"... there is one group that is quite cautious and that is the general run of investment managers and investment advisers. This may be a supporting factor which the obviously poor technical position ... may gain support from."

The question is, is the rise from February the beginning of a long advance such as followed a number of climax bottoms in the post-war period as for instance the following: June 1949; July 1950; September 1953.

Apart from the facts that today's bank credit background is not favorable for an immediate resumption of the bull market, and my guess it will not be for some time to come, I think the only answer is to look at the technical side. Each





one of us has our own pets; I have not time to go into a number that I follow including short interest, odd lots, etc., but would like to point out to you one example in an Advance-Decline index that I use, and which is graphed in Chart III.

This chart shows the whole period weekly from January 1955 up to last week. The Advance-Decline index is a cumulation of weekly advance-decline ratios which moves in a broad way with leading averages. But you will notice the topping-off in late 1955 and the crucial decline after April 1956. The Index tended to expand on the downside and contract on the upside, a condition which has not yet changed significantly.

On the same chart, and on an enlarged but comparable scale, I have put the action of this Advance-Decline barometer in the 10 weeks following each of a number of extended rises in the averages from major bottoms in 1949 and 1953. I think you will agree that it is not too impressive, at least so far, unless it picks up steam pretty soon.

What this Advance-Decline Index shows is when you are getting a broad advance, and when the advance is primarily in fewer stocks under cover of which others are not doing so well.

Having decided we are neither in a major bear market, nor in the beginnings of a bull market, where are we? A good question. The obvious answer is in a trading range such as 1947-9 and 1951-3. I think the lows of 1957 will pretty well set the lows of the next year or two within say 5-10% average-wise. If the market can stay above 455, there is a good possibility that 522 can be exceeded on the upside by say 5-10%. This pattern would be closely similar to 1947 and 1948, and again 1951 and 1952. However, such a break-through should not be allowed to fool us into believing that another major rise was yet ahead; as it might, as in 1949 and 1953, be followed by a duplication or a minor break-through of 1957 levels lows in say 1958 or 1959.

Are there any short-term indices we can look at to give us a clue? Chart IV shows a banking index of combined Federal Reserve and Member Bank investments. This index

has a good record since 1919 of signalling important intermediate and major changes usually a few months in advance. It was still going down last February but may now be changing. In the post-war period its signals have coincided with major bottoms; in the pre-war period, however, its record was good only if treated on an intermediate basis, i.e., 6 months to one year.

Frankly I think it is going to be quite frustrating for the next year or so. For individuals I like Gerald Loeb's approach at this stage which he outlines in his "Battle for Investment Survival." He calls it the "Ever-Liquid Account." You look at things backwards: instead of thinking in terms of 100% invested in stocks, and scaling down as risks rise, you think of 100% in cash and scale up as risks decline. Then when you get into one of the major buying areas such as 1949 and 1953 (which incidentally credit studies are pretty good at pointing out) you switch to the "Hardly Ever-Liquid Account." That is my term for the more orthodox approach.

To summarize very shortly:

- (1) No post-war depression yet in the making.
- (2) No major bear market.
- (3) Too soon for the bull market. Takes time to build the base.
- (4) Lows of 1957 will probably set the later expected bottom within 5-10%.
- (5) Possible break-through 522 either late 1957 or early 1958, but should not be misled. Only similar to 1947-48, 1951-53.
- (6) Credit build-up in the next year or so could build up a base for a real new era bull market such as we have not had yet. (Dow Jones Industrials 1200 sort of idea). This presumably would carry into the 1960's.

Ladies and gentlemen, in conclusion I think I can with this talk on the stock market qualify for some sort of an Oscar. I note that I have not once mentioned the words "earnings" or "price-earnings ratios." That like the credit situation must be unique in U.S. history.

JL
STEEL ***Enters***
Fast-Growing
Stainless
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Field



Rotary Electric Steel Assets and Business Transferred to Jones & Laughlin

The transfer of the assets and business of Rotary Electric Steel Company to J&L became effective April 30, 1957. This marks J&L's first move into the stainless field.

Rotary, or the Stainless Steel Division of Jones & Laughlin as it is now known, accounts for about 10% of the industry's total stainless steel ingot production. This Division's products include stainless steel and alloy ingots, slabs, billets, hot rolled and cold finished bars and wire.

Rotary is ideally situated near Detroit within service range of the automotive and other important markets and near significant elements of its raw materials requirements. The present organization, with sales and operating know-how in stainless, will be continued with M. K. Schnurr, President of the Stainless Steel Division, in charge.

J&L plans to install new facilities to produce stainless steel sheet and strip. These flat-rolled products, which

are not now produced by Rotary, comprise about 60% of the present stainless steel market and are its fastest growing segment.

In making this broad entry into stainless steel, J&L moves into an area of the steel industry which has shown an average annual growth rate of 15.4% over the past decade. This is about four times the rate of growth for carbon steel during the same period.

The many markets already developed for stainless steel in such fields as aviation, atomic energy, guided missiles, armament, food, chemical, construction and general industry are so widespread and diversified as to assure stability and continued growth.

The ability of stainless steel to retain its great strength and its high corrosion resistance at extremes of temperature are important characteristics in its growth. These specific and unusual qualities make the future potential of stainless steel of great significance in both civilian and military uses.



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J & L . . . A G R E A T N A M E I N S T E E L

UNION CARBIDE — E. I. DU PONT

Charleston, W. Va. Trip

RUSSELL MORRISON and PETER AVENALI

THE TRIP TO THE duPont and Union Carbide plants near Charleston, W. Va., made it strikingly apparent why the Kanawha River Valley has attracted the largest concentration of chemical facilities in the world. The valley has an unlimited supply of coal, large quantities of oil, natural gas and brine, low cost electricity, an abundance of native born labor, excellent fresh water and water transportation facilities (the Kanawha River flows directly into the Ohio), and it is located within 500 miles or three air hours of 76,000,000 people.

Upon arrival in Charleston, the 115 analysts who made the trip were split into two groups, spending one day with Union Carbide and the other with duPont and United Fuel Gas.

UNION CARBIDE TRIP

The Union Carbide trip began with a briefing by Mr. Fred Belden, General Superintendent of the South Charleston plant. Mr. Belden explained that the South Charleston and Institute plants are a part of Union Carbide Chemicals Company, which is a semi-autonomous division of Union Carbide. The Chemicals Company produces some 350-360 different chemicals, of which 150-160 are large tonnage industrial products. Another 120 are midway between new products and tonnage items, and of these between 15 and 25 achieve the large-scale industrial status each year. In all, approximately 2½ billion pounds of chemicals a year are produced. Carbide Chemicals Company has approximately 16,000 employees; 10,000 are located in the Kanawha Valley. The South Charleston plant accounts for 5,000, the Institute plant 2,000, and the remaining 3,000 are in various staff groups, including research and development. During its 30 years in the valley, the company has never lost a single operational hour because of labor trouble.

This oldest and largest of Carbide's plants is tremendous. The bare statistics that it covers 200 acres, has 110 miles of pipeline and 6 miles of underground piping for fire protection do not convey an impression of its size nearly as well as the plant's water consumption. Enough water is used at the South Charleston plant to support a city the size of Denver, Colorado. Waste water purification is a problem, and a new multimillion purification plant is now being built in conjunction with the City of South Charleston.

The basic raw material used at this location is natural gas, which is cracked into methane, ethane, butane, and propane. The methane fraction which makes up 85% of the gas by volume is sold back to the fuel companies (although some is used in the manufacture of methanol). The plant also uses large quantities of coal and limestone. We passed the unit where the ethane, propane and butane are heated to

2,000 degrees Fahrenheit in less than one second, and ethylene, propylene and butylene are produced. These chemical building blocks, the most important of which is ethylene, form the basis for a full line of upgraded products. As one official put it, "We are in the fortunate position that all of our products at every stage in the upgrading process are saleable or can be used for further processing, depending on market conditions."

The high pressure polyethylene unit at South Charleston has a capacity of 70 million pounds a year, according to our guide. He mentioned that one little known usage of the product was in the manufacture of bread wrappers. Almost all these wrappers are coated with a mixture of polyethylene and wax to improve their appearance. On the railroad siding near the plant we saw reusable rubber shipping bags for polyethylene being loaded six to a gondola car.

One other large group of buildings was the Vinyl resins plant. Some of the many other important products made at South Charleston are various types of alcohols, ethylene oxide, ethylene glycol, plasticizers, Dynel, and several amines and esters.

At the Union Carbide Research Center Dr. Franklin Johnston, Director of Research for Union Carbide Chemical Co. gave us background information before our tour of that facility. Dr. Johnston told us that the company spent \$55 million on research in 1956, and that higher outlays for this purpose are planned in the current year. Each plant has its own research group in addition to the large South Charleston Laboratory.

The South Charleston Research Center was first occupied some eight years ago, and it is equipped to do bench scale research of all types. Several pilot plants are adjacent to the main laboratory, and special radiation laboratories are nearby for handling radioactive materials. During the tour, we met many of the laboratory's 75-80 scientists and technicians with advanced degrees, about half of whom are PHD's.

Probably the most impressive feature of the facility was the variety and complexity of the research tools in use. We saw a demonstration of an electron microscope which yields a 200,000 diameter magnification. Other tools of analysis included a mass spectrometer, an infra-red spectrometer, and a nuclear magnetic resonance spectrometer. None of us had the slightest idea what the latter instrument accomplished, but we nodded knowingly when told that the operator was testing the crystallinity of a high-pressure polymer.

After a delightful buffet lunch at the Center's recreation building, we visited the Institute plant. On the way to the plant, we passed the West Virginia State College, which received so much favorable publicity because of its successful integration program.

The Institute plant, named for the town of Institute, is located on the site of the former Charleston airport. The plant was originally built by the government to make butadiene and styrene, the ingredients for synthetic rubber.

Carbide bought it in 1946 and moved in the following year. Institute, under Mr. C. H. Atwood, has 16 major units, and another power house is presently under construction. The plant makes 75 end chemicals, 25% of which are made in no other company location. Pipeline interconnections with the South Charleston plant make for maximum flexibility in production, since raw materials or intermediaries can be transferred between sites. The plant's research laboratory is concerned primarily with quality control and the repair and calibration of instruments. A new 12,000 sq. ft. wing is being added. Two styrene units designed to produce a total of 50 million pounds are still operated. Most of this output is shipped directly to the company's Bakelite division. The new 30 million pounds a year low pressure polyethylene facility was well along in construction and should be ready sometime this fall. Some sources are now estimating that low-pressure polyethylene capacity for the industry to reach 600-800 million pounds by 1961.

Other important operating units produced catalysts, plasticizers, acrylonitrile, and several types of alcohols. We toured the acetone building and that for making ethyl alcohol by a new direct hydration process.

Our last stop was the company's plant for the hydrogenation of coal. A large facility, used primarily for development purposes, was shut down in August, 1956. This was superseded by a smaller and more versatile unit incorporating the many advances already achieved in the field. The company believes its policy of being well advanced in coal hydrogenation technology will pay dividends sometime in the future, when and as gas becomes too expensive or too scarce to use as a raw material. The company recently purchased a large tract of low-grade coal property, which is now being used for recreational purposes until the coal itself is needed.

During our entire trip, we were grateful for the high calibre of our guides, who were familiar with the smallest details of the plant's integrated operations. Their patient explanations developed interesting ideas.

After a short stop at the hotel, we were taken to the beautiful Edgewood Country Club, where as guests of Carbide and duPont dinner and cocktails were enjoyed.

DUPONT AND UNITED FUEL GAS TRIP

Our day with duPont and United Fuel Gas began with breakfast served in the employees' cafeteria of the beautiful new United Fuel home office on the banks of the Kanawha River. After this came a short tour of the building. From the roof one has an almost unbelievable view of the lush valley, split down the middle by the winding river.

We immediately boarded busses and had a half hour drive to the duPont Belle Plant.

The Belle Plant ranks as one of duPont's largest and ground was first broken here some twenty-six years ago. It is exceeded in size, we were told, only by the Chambers Works at Wilmington. Some 4,000 are employed at Belle. Products are many and include ammonia, urea, anti-freezes and countless intermediate chemicals.

The plant represents duPont's first commercialization of high pressure synthesis. Coal and natural gas are the chief raw materials for the synthesis gases—hydrogen, nitrogen, carbon monoxide and carbon dioxide. Coal is delivered by

barge at the coke plant, where it is converted to coke. The latter is then converted to synthesis gas by being heated and cooled in the presence of air and steam. By means of partial combustion of natural gas with oxygen, additional synthesis gas is produced.

The manufacture of synthesis gas is probably the most spectacular process at Belle. Synthesis gas from these two processes provide the building blocks—nitrogen, hydrogen, carbon monoxide and carbon dioxide—necessary for the related products made at Belle.

The process is so rapid that only thirty minutes are required for a unit of gas leaving the coke bed in the gasification step to appear as its equivalent as a finished product. During the thirty minutes, it is heated to 2400 F. cooled to 350 F. below zero, expanded to atmospheric pressure, compressed to 12,000 pounds per square inch, washed and re-washed with water and other liquids, and passed over various catalysts.

One of the most interesting things about Belle is the fact that the plant is being converted from coal to natural gas as the primary raw material. All of us were impressed with the huge capital investment involved in taking this step. We watched with interest the tremendous coke ovens reducing coal, all of which will be out of operation by 1960.

All through the plant various processes are constantly being changed. Perhaps a good example is in one where 1/3 of the operation is modernized and 2/3 about to be. Two men per shift handle the new 1/3; twenty men are required to handle the now obsolete 2/3.

Belle is a maze of pipes and impressive instruments. In one corner of the vast works, box cars loaded with empty cans are brought up on a siding, unloaded directly to an endless belt, filled with anti-freeze, sealed, packed in boxes, palletted and loaded in more box cars on the other side of the building. The entire operation, and it is a big one, is almost completely automatic. Two men are now engaged in putting cartons on pallets by hand but we were told that someone has invented a way to do this by machine and it will be in operation soon.

We had been broken up into small groups for our morning tour, but at noon we reassembled. A trip followed through the large section of the plant devoted to the manufacture of ammonia, one of Belle's major products.

Our final destination was the Coco compressor station of the United Fuel Gas Co. (Subsidiary of the Columbia Gas System).

Coco was completed in 1951 and performs a key operation—it takes vast quantities of natural gas from the Southwest and pumps it into depleted wells for summer storage. In the winter, gas is removed from storage and pumped by the Coco station into a 26-inch line for eastern markets. In addition, in 1956 Coco was given a new assignment. A 16-inch line direct to the duPont Belle Works was built and it is estimated that eventually 31 million cubic feet per day will be pumped there for processing. The station has a present capacity of delivering up to 385,000,000 cubic feet daily.

We toured the immaculately clean plant and were given an excellent description of the operation by company representatives.

KAISER ALUMINUM — OWENS-CORNING

The Columbus, Ohio, Field Trip

THOMAS H. LENAGH

Cyrus J. Lawrence & Sons

ON WEDNESDAY, MAY 29TH, a group of 94 analysts left Cleveland in two chartered buses bound for Columbus. They arrived at about 6:30 p.m. for a two-day visit to plants of Kaiser Aluminum and Owens-Corning Fiberglas.

Almost immediately after arriving they became guests of the Kaiser Aluminum management at a cocktail party, and buffet dinner. This was attended by top officials of both Kaiser and Owens-Corning. An informal after-dinner talk by Mr. Russell Clayton, Kaiser Aluminum Vice President, explained the current position of the company and emphasized optimism of Kaiser executives in the long-term growth potential for the metal.

Thursday, the group was taken to the Newark, Ohio, works of Kaiser, located about 34 miles from Columbus. This 1,200,000 square foot plant situated on a 300-acre site, has 36 buildings and is the largest United States manufacturing unit of covered aluminum conductors.

Plant officers made excellent preparations to receive us. Guides of great understanding called our attention to how Newark's operations start with the aluminum pigs delivered by rail from Kaiser's Louisiana reduction plant at Chalmette. Later at Newark these pigs are melted down, alloyed, and made either into extrusion ingots or blooms. A guided tour of the whole plant showed how the blooms were scalped and then made into rod, bar, screw machine stock, cable or drawn into wire. Although basic research is not done at Newark, we were shown the plant facilities used for applied research and quality control. This clarified problems.

After our examination of the Newark plant Owens-Corning became our hosts at luncheon at the Granville Inn. This was followed by a tour of the Fiberglas plant at Newark. Talks by Mr. H. R. Winkle, Financial Vice President; Mr. W. K. Sidwell, Newark Plant Manager, and Dr. Games Slayter, Director of Research, directed our attention to various new products now under development. Among the most interesting is a method of coating glass fiber with molten aluminum and/or lead. At present this can only be done simultaneously with the drawing of the hot fiber.

When and if the same process can be done to a cold fiber, the cost will be competitive and a strong lightweight material may result. No time estimate could be given as to when commercial production might be undertaken.

After luncheon the analysts divided up into small groups and were taken through the factory. The Newark plant includes five units: Wool, Filter, Aerocor, Acoustical and Marble. The largest of these is the Wool Factory where basic wool-type products are produced, fabricated, packed and shipped. This factory daily processes about 1,300,000 pounds of batch materials which are melted to form glass and produces batt, blanket, and board-type thermal and acoustical insulation. At the Filter Factory replacement filters and filters for original equipment (heating and air conditioning) are manufactured. Annual output is approximately ten million standard and one million special filters. Light density, fine-fibred Aerocor insulations in blanket and fabricated forms are produced in the Aerocor Factory. These products are used in a variety of thermal and acoustical insulation applications.

Some 25 different types of noise control products are produced by the Acoustical Factory. Fiberglas noise control products are manufactured in a wide variety of designs, finishes, facings and sizes.

The Marble factory was the most dramatic. Here it was revealed how under intense heat, generated from natural gas, marbles are made. These are later shipped to the company's textile manufacturing plants where the marbles are remelted and drawn into filaments which are twisted and plied on standard textile equipment. A single thread, approximately 97 miles long, two ten thousandths of an inch in diameter, can be drawn from one marble.

At the conclusion of the tour company officials were available for discussion and questions. Thus adding to our growing fund of knowledge.

Both tours were extremely profitable and managements did all in their power to make them illuminating. Analysts who enjoyed this experience hold a full measure of gratitude for Kaiser Aluminum & Chemical Corp., Owens-Corning Fiberglas Corp., and Paul Henderson and Edward McNelly, the trip managers.

FIRESTONE TIRE — McNEIL MACHINE

A management conference with officials of Firestone was the first order of business upon arrival in Akron. The plant tour that followed covered the entire production line from crude rubber to the finished tire. The analysts also inspected Firestone's synthetic rubber plant and the steel products plant (jet engine parts, rims, stainless steel barrels, etc.).

After lunch as guests of Firestone, the group visited McNeil Machine for a conference with top management headed by President Charles F. Safreed. They toured the plant that makes the company's "Bag-O-Matic" press—the tire-making press used throughout the industry.

McNeil Machine Company

CHARLES F. SAFREED

President, McNeil Machine & Engineering Co.

GENTLEMEN OF THE NATIONAL FEDERATION of Financial Analysts' Societies, it is a pleasure to welcome you to McNeil this afternoon. We are honored that you have selected our company as one of those worthwhile visiting in the Akron area. It would seem to me that you might be interested in some of the background of McNeil.

Our company was organized in 1932 as a successor to a business originally established in 1862. The present management group purchased all of the outstanding stock of McNeil in October of 1936, the purchase price being \$15 per share for each of the 500 shares then outstanding, or a total of \$7,500. The gross sales of McNeil in those days was less than \$90,000 per year. In 1956 these sales, together with those of other companies which we have purchased in the meantime, amounted to \$36,440,000.

In 1943, we acquired the physical assets of the Summit Mold and Machine Company of Akron, which is now our Summit Division. In late 1948 and January 1949 we acquired 100% of the outstanding stock of The Cleveland Crane & Engineering Company at Wickliffe, Ohio. In January 1956 we acquired all the physical assets of the Hamlin Metal Products Company of Akron, Ohio, and in April 1956 we acquired 100% of the outstanding stock of the Lincoln Engineering Company of St. Louis, Missouri. Each of these acquisitions was made with the thought of diversifying our production and thus adding strength to our company.

In 1951 we made a stock split of 1,000 to 1, thus changing the original 500 shares to 500,000 shares with a \$.50 par value. As of today, one of the original 500 shares which cost the original investor \$15 has a market value

today of approximately \$39,000. Truly McNeil is a growth company.

Let me give you some of the highlights of each of the divisions of McNeil:

McNeil-Akron operations encompass the manufacture of rubber curing vulcanizers known under the copyright name of "Bag-O-Matic". These automatic presses are purchased by tire manufacturers for use in curing tires ranging in size from small industrial through bicycle sizes, passenger automobile sizes, truck sizes and off-the-road earth moving sizes, with McNeil accounting for approximately 80% to 90% of all such vulcanizers produced. What the development of the "Bag-O-Matic" press has meant to the tire industry is evidenced by the following productivity figures. Under the old pot heater method, about 200 tires per 24-hour day per worker could be cured. This figure was increased to about 420 tires per 24-hour day per worker by the introduction of our shear strip press in 1938. Our "Bag-O-Matic" presses have enabled tire manufacturers to raise this figure to over 3500 tires per 24-hour day per worker.

We have recently added automatic loading and unloading features to the "Bag-O-Matic" presses, further increasing their productivity. While all the presses we are currently producing do not have these new devices, the presses are so designed that they can be later adapted to their use.

"Bag-O-Matic" presses are used not only in this country, but are manufactured for foreign use by licensees in England, France, Italy, Germany, Australia and Japan. "Bag-O-Matics" dominate the foreign markets as they do the United States market. Recent advices from our foreign licensees indicate that very large orders for this equipment have been, or soon will be, placed by the Russian government. Our revenue for royalties from sales by foreign licensees has steadily grown and in 1956 royalty income received was \$529,700. We confidently expect this phase of our business to have a very healthy growth over the next several years.

McNeil-Akron also produces a mechanical goods vulcanizing press in a wide range of sizes. These presses are used for the production of many types of rubber products other than tires. We have enjoyed a constantly growing market for such presses which embody features which make possible very substantial increases in productivity.

A new field for McNeil's "Bag-O-Matic" press is opening up because of the growing interest in "rubber air springs" for passenger automobiles. These air springs have been used on certain trucks, busses, etc. for some time past, and are to be used as original equipment on one of the premium price level cars for 1958. These are also expected to be introduced on many of the lower-priced cars during

1958. The proven "Bag-O-Matic" process is readily adaptable to the curing of these rubber air springs, and a wide adoption of such springs for passenger cars will mean a substantial new market for the company. As of now, we have in excess of 50 such presses on order.

The Cleveland Crane & Engineering Company—This Division was acquired early in 1949. Operations include the manufacture of heavy overhead cranes with particular emphasis in design for steel mills, etc., and in the last couple of years we have produced a goodly number for the aluminum industry, these cranes being constructed almost entirely from rolled aluminum plate. Other products of Cleveland Crane consist of "Tramrail" overhead materials handling equipment, heavy-duty metal working machines, such as "Steelweld" press brakes and shears, as well as a new line of metal forming presses which have met with a very gratifying response from the automotive industry. These latter presses are used for the forming of various sheet metal parts used in the body construction of automobiles.

Hamlin Metal Products Division—Through the acquisition in January 1956 of Hamlin Metal Products Company, McNeil entered the field of commercial metal stampings, principally for the automotive and aeronautical industries. In addition, Hamlin has developed steel and aluminum collapsible and returnable shipping containers. This container, known as the "Hamlintainer", makes for swift, economical handling of many products. After being delivered to destination they are readily handled by fork-lift trucks, and after having been emptied they may be collapsed and returned to the supplier for a very nominal freight hauling charge. The savings from packaging costs and in handling time of products should be substantial. Industry is beginning to see these inherent tangible advantages, in addition to the intangible savings in labor costs. Several major corporations have expressed a growing interest in this product, and the company is receiving substantial orders which should contribute to income.

The Lincoln Engineering Division—During April 1956 McNeil acquired all the common stock of Lincoln Engineering Company of St. Louis, Missouri. Lincoln is an important manufacturer of gasoline station equipment, and lubricating equipment for the automotive agricultural equipment and road building machinery industries. Its new "Multi-Luber", which is now optional standard equipment for Lincoln and Mercury cars, and which is available as a "kit" for cars in the low-price field, is expected to add materially to Lincoln's sales. In addition to the demand for new and improved automatic lubricating systems brought on by automation and the general need for more thorough lubrication, a normal growth can be expected in keeping with the rate of expansion of our national economy.

In each of the acquisitions outlined, our primary purpose was to find a company which would diversify our sales. We were interested in companies that had growth possibilities, and particularly those which had good, sound managements. It has always been our contention that almost any company

with a salable product and good management can be made successful. In fact, the management team of each of these companies was one of the most important factors which led to their acquisition.

It is still our hope to make further acquisitions, and in planning for this McNeil obtained loan commitments in January of 1956 aggregating \$6,000,000 from financial institutions. As of December 31, 1956, \$2,640,000 of this amount had been used. The remainder is on standby commitment from such institutions until July, 1957. We were quite proud when four of our Akron and Cleveland banks evidenced their confidence in McNeil by granting this \$6,000,000 commitment on a ten-year basis at interest rates of $1\frac{1}{2}\%$ over the prime rate with the ceiling of $4\frac{1}{2}\%$ and a floor of $3\frac{1}{2}\%$. This loan agreement places certain restrictions on the surplus of the company. In accordance with the formula prescribed therein, dividends which may be declared or paid in 1957 on all classes of stock cannot exceed \$1,536,867. This is the equivalent of \$2.40 per common share, based on the number of shares outstanding as of December 31, 1956.

As of December 31, 1956, our total current assets amounted to \$18,894,384, and our current liabilities were \$5,226,076, giving us a net working capital of \$13,668,308. The ratio of current assets to current liabilities was 3.6 to 1. Stockholders equity value amounted to \$27.42 per share. We have 750,000 shares of Common Stock authorized with 577,500 shares outstanding. We have 148,265 shares of 5% Cumulative Preferred Stock \$40 par value authorized, convertible into our Common Stock on a share-for-share basis through January 1, 1966. There were 73,211 shares of this Preferred Stock outstanding as of Dec. 31, 1956.

As shown in our 1956 Annual Report, during the past ten years our sales have enjoyed a healthy growth from \$10,705,000 in 1947 to \$36,410,000 in 1956. Likewise our net income has shown a satisfactory increase. In 1947 we earned \$1,070,000 after taxes, and in 1956 our net earnings were \$3,073,000. Based on the 577,500 shares outstanding at December 31, 1956, and adjusted for a 10% stock dividend in 1954, and a 5% stock dividend in 1955, earnings per share have increased from \$1.85 in 1947 to \$5.07 per share in 1956. On April 24, 1957, our Board of Directors increased our quarterly dividend on the Common Stock by the declaration of 50c per share, representing an increase of 10c over the previous quarterly rate of 40c per share.

OUTLOOK

The first quarter of 1957 was the largest in our history, both as to net sales and net earnings after Federal taxes. Such net earnings were \$984,280 or \$1.64 per share after allowance for Preferred dividends. These figures compare with \$743,053, or \$1.29 per share in the first quarter of 1956.

With an over-all backlog of orders of some \$15,000,000 and with our "Bag-O-Matic" capacity scheduled into the first quarter of 1958, we anticipate a new record volume of business in 1957, and net earnings substantially in excess of the 1956 figure.

LIBBEY-OWENS-FORD GLASS

The trip to and from Toledo was made by bus on the new Ohio Turnpike. Plant tours morning and afternoon were interrupted for lunch at the Toledo Club, followed by a conference with Chairman Biggers, President MacNichol and other top management representatives. The lunch was sponsored jointly by Libbey-Owens-Ford and Toledo Trust Company.

The plant tours covered all phases of flat glass production from colorful melting furnaces through the annealing, grinding and polish operations to the final product. The group also inspected facilities for bending and laminating plate glass blanks into finished panoramic windshields. These comprise the major operations at the recently expanded and modern East Toledo production center. Finally the nearby Rossford plant was visited for a look at the unique twin-grinders.

Libbey-Owens-Ford

An address by Management Representative

OUR PREFERENCE THIS NOON would be to devote all the time available to answering your questions, but your Chairman has asked us to give you a composite word-picture of Libbey-Owens-Ford, so we will try.

We know the questions members of your profession ask when they call upon us individually, so we will aim to cover them as concisely as possible.

L-O-F is a leader in the flat glass industry of the world, perhaps *the* leader. The term *flat* glass applies to our basic products though I must say panoramic windshields and backlights are anything but flat today. These basic products include:

Window glass—used in most residences, many factories and other types of buildings where plate glass quality is not required; also, in inexpensive mirrors and framed pictures, and in some automobiles in the form of safety sheet glass.

Plate glass—for storefronts and finer buildings, quality mirrors, as safety plate glass for use in fine motor cars, and a myriad of other uses.

Safety glass—for automobiles, trucks, airplanes, railroads, ships and many non-transportational uses as well.

Thermopane—the pioneer and leader in the insulating glass field.

We will tell you more about our other products later if time permits.

Flat glass was once regarded as a mature industry—some-

what static. It has become a dynamic industry with continuing growth opportunities. We are convinced that the modern architectural and design trends toward more and more glass in buildings, in motor cars, trains and ships, in furniture, in nearly everything, is not a passing fad but is inspired by sound functional and esthetic considerations—better vision, greater safety, the love of beauty—whether in design or in nature.

For a number of years Libbey-Owens-Ford has worked diligently to aid and abet this trend toward more glass. We have employed advertising, publicity and sales promotion—but even more importantly, we have called upon production, engineering and research to expand our capacity, improve our products and hold down costs through increased efficiency. The combination has succeeded.

FUNDS INVESTED SINCE WORLD WAR II

Since World War II we have invested \$141,000,000 of capital funds in new manufacturing plants and equipment, and have spent additional millions on the development of new methods and processes. As a result, Libbey-Owens-Ford's productive capacity of its basic products has been increased substantially—window glass 56%; Thermopane 220%; plate glass 166% and safety glass approximately the same.

A considerable part of this capital investment went into the East Toledo plant you visited this morning; some into the Thermopane plant which your buses will pass after luncheon but which unfortunately you do not have time to visit. A very substantial amount was invested in the revolutionary improvement and expansion of our Rossford factory where we are going right after luncheon. There you will see Parallel-O-Plate, the finest plate glass in the world, being manufactured for storefronts, quality mirrors and panoramic automobile backlights by two giant twin grinders which started operation in 1953 and 1954 respectively. You will see the only twin ground glass now being manufactured in the United States, though a competitor is installing one similar grinding line at the present time.

At the conclusion of your trip you will have seen two of our plate glass plants. The third and largest is at Ottawa, Illinois, where in 1956 we invested heavily in new and improved facilities. Our large window glass factories are at Charleston, West Virginia and Shreveport, Louisiana.

THE EXPANSION PROGRAM

Concurrently with our great expansion program, the quality of our products has been consistently improved and we have quite successfully resisted the inflationary price trend. Our selling price of window glass is only 59%

above what it was in 1926. Our plate glass prices are actually 2% below those of 31 years ago, whereas during the same period building materials as a whole have advanced 151%, and the average hourly straight-time earnings of our employees have increased 450%. To have achieved such results, it is obvious that great strides have been made in manufacturing techniques and efficiency.

When you gentlemen call upon us you invariably ask about our contract with General Motors, so I will attempt to cover that important aspect of our business quite fully.

We have had the privilege and responsibility of supplying General Motors with *all* the glass used in *all* its cars in the U. S. A. since 1931—26 years of a mutually satisfactory relationship without many parallels in American business.

Why does General Motors, the greatest user of glass in the world, entrust all of its vitally important glass requirements to Libbey-Owens-Ford? Only General Motors can answer that question authoritatively, but I will tell you what we think.

To understand all the reasons, we must go back more than 30 years. With the introduction and popularity of the closed automobile in the early 20's there was a sudden increase in the use of glass and a severe shortage of plate glass in America. General Motors and the Ford Motor Co. bought plate glass plants and built others to protect their requirements. During the late 20's General Motors invested many millions in fine new glass plants but both G.M. and Ford found the problems of glass manufacture difficult and very different from those surmounted in other phases of automobile manufacture.

General Motors in 1931 sold its glass plants to us and contracted with us for its glass requirements. The Ford Motor Co., in trying to keep pace, has spent a great many millions getting in and out and back into the plate glass business.

During the past three decades there have been four important and revolutionary advances in the processes of plate glass manufacture involving heavy outlays for new buildings and equipment. Years ago we provided multiple protection for General Motors. Everything from molten glass to their finished safety plate glass is made in two or more separate factories so as to minimize the hazards of industry and provide continuous supply.

Libbey-Owens-Ford's dependable service to all customers is now better insured than ever before by our \$59,000,000 expansion of facilities in 1955 and 1956, some of which you are seeing today. This, combined with our maintenance of highest quality standards and fair prices based upon constant improvements of methods and machinery and excellent manufacturing efficiency, seems to have fully justified General Motors' continued confidence in Libbey-Owens-Ford's ability to meet its requirements.

There is one other very important but less tangible reason. General Motors' policy has freed it completely of glass manufacturing problems, which have been magnified by great technological changes. It has placed full responsibility on Libbey-Owens-Ford which is expert in this one highly specialized field. As a result, by closest cooperation and long-range planning, General Motors has gained leadership

in glass design and usage and in maintaining the highest optical quality in the glass in its cars.

THE G. M. CONTRACT

You gentlemen often ask specifically about the General Motors—Libbey-Owens-Ford contract. The basic contract is continued in force by annual renewals. They and we negotiate prices each year. We have always reached agreement and the contract is thus renewed for one more year. If we ever failed to agree, the mutual commitments would terminate completely in two years beyond the then current year. This extended protection is of equal importance to buyer and seller.

I have mentioned the contract relationship with General Motors in some detail because I know that you are interested in it, but I want to emphasize that the protection which our enlarged facilities give to General Motors is also a definite assurance of dependable service and of quality products to all of our other glass customers, including the armed forces of the United States.

RESERVE FOR DEPRECIATION

Another feature about which financial analysts often inquire is our depreciation policy. Our current reserve for depreciation is at an annual rate of \$19,500,000, nearly double the amount we are permitted to take as a tax deduction. In addition to normal depreciation, we charge against earnings an accelerated depreciation on new facilities during each of the first four years of ownership. This may seem unnecessarily conservative, but is approved by the S.E.C. and we consider it realistic if we are to retain leadership in this progressive industry, where technological advance has come rapidly and history has shown that equipment is often obsoleted before expiration of its normal life.

Another question frequently asked is, "How does Libbey-Owens-Ford maintain its favorable profit margin?" A few facts are worthy of your consideration. Our actual net worth is considerably in excess of published figures because our conservative depreciation policy has been paralleled in recent years by ever mounting costs of new buildings, machinery and equipment. Thus, as of now, the replacement cost of our manufacturing facilities would be \$406,000,000, according to engineering estimates, whereas the original cost was \$169,129,000, and our depreciated book value is \$65,292,000.

Obviously, if anyone were entering this business today, only a meager return on invested capital could be expected at present selling prices of glass.

You are quite properly interested in the financial strength of any company. Libbey-Owens-Ford, as you know, has no senior securities or debt. We have paid reasonably liberal dividends averaging 61% of earnings during the past decade. In addition, out of retained earnings and depreciation reserves, we have, since World War II, paid \$141,000,000 for plant expansion and improvements, as previously mentioned, without any borrowings.

Our 1957 capital expenditures will approximate \$15,000,000 and those already planned for 1958 a little over \$8,000,000.

On May 1, our cash resources were divided as follows:

General Fund	\$37,683,000
Plant Replacement and Improvement Fund	17,782,000
Tax Anticipation Notes	14,022,000
Total of Cash and Short Term Governments	\$69,487,000

Total current liabilities were \$24,817,000 and our current ratio 7.4 to 1.

We do not deal in predictions, but knowing your proper interest in future prospects, I will risk saying a few words on that subject before concluding.

The year 1957 is nearly half over. Our major automobile glass customer has not maintained the extraordinarily high percentage of industry production which it attained in 1954, 1955 and 1956. Residential building starts have de-

clined 16.7%. Imports of glass from the low wage countries of Europe and Asia have invaded our American market, and are continuing to cut into both domestic sales and employment. As a result of these developments our sales during the first quarter declined 11% but we succeeded by effective utilization of our new facilities in holding the profit reduction to 7½%. We think sales for the year as a whole will be somewhat less than 1956 but believe we can maintain an earnings-to-sales ratio no less favorable than that of the first quarter.

OPTIMISTIC FOR THE FUTURE

As to the longer range future, we are optimistic. The rapid growth of population indicates a continuing need for more homes, more commercial buildings and more automobiles. All are important users of glass, and in all these industries there is an expanding use of glass per units.

CONSOLIDATED NATURAL GAS COMPANY

30 Rockefeller Plaza
New York 20, N. Y.

DIVIDEND No. 38

THE BOARD OF DIRECTORS has this day declared a regular quarterly dividend of Forty-Seven and One-Half Cents (47½¢) per share on the capital stock of the Company, payable August 15, 1957 to stockholders of record at the close of business July 15, 1957.

R. E. PALMER, Secretary
June 19, 1957

NATIONAL DISTILLERS

PRODUCTS
CORPORATION



DIVIDEND NOTICE

The Board of Directors has declared a quarterly dividend of 25¢ per share on the outstanding Common Stock, payable on June 1, 1957, to stockholders of record on May 10, 1957. The transfer books will not close.

PAUL C. JAMESON
April 25, 1957. Treasurer



A dividend of seventy-five cents per share on the capital stock of this Company has been declared payable July 15, 1957, to shareholders of record June 7, 1957.

EMERY N. LEONARD
Secretary and Treasurer
Boston, Mass., May 20, 1957

AMPHENOL

AMPHENOL ELECTRONICS CORPORATION

At a meeting of the Board of Directors of Amphenol Electronics Corporation held today a quarterly dividend of thirty cents per share was declared, payable July 26, 1957, to the shareholders of record at the close of business July 12, 1957. The transfer books will not be closed.

Dated at Chicago June 25, 1957.

FRED G. PACE
Secretary

AMERICAN ENCAUSTIC TILING COMPANY, INC.

Manufacturers of Ceramic
Wall and Floor Tile

COMMON STOCK DIVIDEND

Declared April 17, 1957
15 cents per share
Payable May 24, 1957
Record Date May 10, 1957

America's Oldest Name in Tile



SOCONY MOBIL OIL COMPANY INC.

Dividend No. 185

The Board of Directors on April 23, 1957, declared a quarterly dividend of 50¢ per share on the outstanding capital stock of this Company, payable June 10, 1957, to stockholders of record at the close of business May 3, 1957.

A. M. SHERWOOD, Secretary

Trip Manager
JOHN R. CHAPLA
Paine, Webber, Jackson & Curtis

THEW SHOVEL—LORAIN INDUSTRIAL AREA

The analysts were guests of Thew Shovel throughout the day. The trip was made via the new Ohio Turnpike.

Thew makes the well-known "Lorain" power shovels and cranes, and is the largest manufacturer of commercial size machines. Plant No. 1 does the heavy work of gear cutting (multiple head acetylene cutters), shaping, and heat treating, as well as assembly of the completed machines. Nearby Plant No. 4 is a straight assembly and painting operation. Both plants were visited.

After the Thew plant inspection, the group took a short bus tour for an inspection of the variety and extent of the rapidly developing Lorain-Elyria industrial area. The route covered Lorain harbor, the best natural harbor on Lake Erie (B. & O.'s highly developed coal handling facilities were featured); U. S. Steel's National Tube Division; great new plants in process by Atlas Cement, National Gypsum, and Ford; and finally the world's largest sandstone quarries in nearby Amherst were seen.

The tour concluded at the Elyria Country Club for cocktails, lunch, and a conference session with President Smythe and other Thew officers.

The Thew Shovel Company

C. B. SMYTHE

President of The Thew Shovel Company

THE THEW SHOVEL COMPANY is an Ohio corporation, 58 years of age come July of this year, having been organized in 1899 by a group of Ohio industrialists who decided to back the promising power shovel designs of a Great Lakes ore boat captain named Richard Thew, whence our name.

Our executive offices and main plants are located here at Lorain, Ohio. Our Parts Division and bronze foundry are at Elyria, Ohio. We build our automotive rubber tired mountings at Bucyrus, Ohio. A wholly owned subsidiary, Byers Machine, Inc., produces our smallest model machine at Ravenna, Ohio and operates a machine shop for the convenience of the other plants. Another wholly owned subsidiary, Lorain Holland, N.V., at The Hague, is in charge of production of certain of our machines in the Netherlands and their sale in the European Protective Union, the soft currency countries.

THEW "LORAIN" PRODUCT

Our product, marketed under the trade name "Lorain," comprises a line of excavating and material handling machines known to the trade as Power Shovels and Cranes. When you see one bearing the name "Lorain" remember

that the machine carries our trade name. The Thew Shovel Company of Lorain made it.

INDUSTRY OUTPUT

The current rate of output for such product by the entire industry in the U. S. A. is of the order of \$375 million to \$400 million yearly. Of this total about \$75 million to \$100 million represents large and in many instances specially designed machines such as the big coal stripper which was built by Marion Power Shovel and operated by Hanna Coal Co. at Cadiz, Ohio. This outsized machine carries a 60 cubic yard bucket, stands seven stories high and reportedly cost between \$2 and \$3 million.

The balance of \$300 million constitutes the so called "Commercial" bracket of such product. Such machines have rated capacities of 3/8 to 2½ cu. yd. as shovels and 5 to 60 ton lift as cranes. Thew-Lorain produces in the commercial bracket only with the exception of one crane of 75 tons rated lifting capacity.

While the commercial group represents 75% to 80% of the total output in dollars, it actually takes in over 90% of the units. Such machines are to a certain extent of conventional design. They are built for stock and are carried in stock both by the manufacturer and the dealer. They run in price from \$15,000 to \$150,000.

THEW POSITION IN INDUSTRY

We are one of some eighteen manufacturers in this field. Of these eighteen companies, five offer machines of size greater than those in the "commercial" bracket. Eight of them (including the foregoing five) attempt to cover the entire "commercial" range. The others confine themselves to a limited number of sizes or types, usually one or two in the "commercial" group. Two or three producers are in a truly marginal category. The severest competition for Thew-Lorain remains Bucyrus-Erie, Baldwin Lima Hamilton, Harnischfeger, Northwest Engineering, Link Belt and Koehring—in about that order.

Thew stands first in the commercial group with about 17% of the sales. We must concede to Bucyrus-Erie however in the overall industry because of their large machine business. Thew-Lorain offers a complete line of machines in the commercial bracket, with the greatest selection of mountings, attachments and accessories of any of the competing companies.

PHYSICAL OPERATIONS

So that you may gain the most from your visitation it would be well before you start to have a general, if very brief, idea of what you are going to see and our function in the manufacture of our product.

Our machines are composed of three main components—a truck, a turntable or superstructure, and a boom assembly known to the trade as the front end attachment.

The front end attachment is the business end of the machine. Its form is determined by the character of the work to be done.

The superstructure contains the motor and the mechanisms necessary to actuate the various motions of the machine.

These two components are mounted rotatably upon a truck which not only gives them support but which transports them from place to place. If the truck is rubber mounted it may have its own motor and driver for travel at the higher speeds.

Because there is a current belief that we are far more of an assembly plant than a fabricator let me say that our payroll last year equalled 23% of our sales and, that of our floor space, 51% is employed in actual machining and fabricating and 20% for assembly. The balance goes 10% for office and 20% for warehouse.

It is true that we buy our motors and much of our automotive equipment, that we buy raw steel and iron castings instead of operating foundries and that we subcontract certain operations to the extent we believe necessary and advisable for the greatest economy and flexibility—but as you will find out, we are fabricators in a big way and in the true sense of the term—and the fabrication is principally in steel, particularly steel alloys, to the tune of 1,000 tons per month.

You will see machine tools, many of them big fellows, as our products and their components are large, some castings weighing over 6,000 pounds. At the same time they are fine tools of the precision type, for our tolerances are exceptionally close. You will not find a single one of the old time farm machinery standards here.

Modern design and methods mean much welding. We do a tremendous amount of it. Jigs, fixtures and templates, too, making for complete interchangeability, are standard for our entire line.

At our Elyria plant you will see a parts business—a hardware store if you please—selling about a million dollars worth of wares per month, and making, itself, many of the parts for the older machines no longer in production.

A break here for trip through plant.

OWNERSHIP

The company had outstanding as of December 31, 1956 455,946 shares. They were owned by 1,993 shareholders of record. Of these, 520, owning 200,000 or 44% of the shares were in Ohio. New York contained 450 owners holding 136,000 or 29% of the shares. Of the New York holders, 101 were brokers in whose names were approximately 80,000 shares, or 17%. A recent canvass of the broker holdings indicates that between 500 and 600 individual accounts are involved. From this it would seem that the actual number of share owners approaches 2500.

Our shares have trading privileges on the American Stock Exchange (granted about 1931). The shares are not listed nor is the company registered with the S.E.C.

In September 1956 The Chemical Corn Exchange Bank of New York became a Co-Transfer Agent and the Empire Trust Co. of New York a Co-Registrar for our shares. The Lorain County Savings & Trust Co. of Elyria, Ohio continues as Registrar and Transfer Agent.

MARKET DIVERSITY

I have said that our machines are excavators and material handlers. The distinction between the two is that an excavator is presumed to dig material from its pristine location in, on or underground; sometimes under water. Material Handling refers to the picking up and putting down somewhere else of the same or other materials at any time thereafter.

Because of the relatively large size of our machines there is implied the digging or handling of comparatively large quantities of dirt, rock, ore and scrap or of heavy awkward items and packages. This is the case and the number and variety of mining, industrial and construction applications in this country and abroad gives us a good diversity of markets.

We catch things going and coming. As an example, we log in the forests and feed the products to the pulp grinders in paper mills and to the saws in sawmills. We stack the resulting products in the mill yard and again handle them in and out of supply yards or storage sheds. And finally, at the paper mills, we stack millions of bales of waste paper when it returns to start once more through the paper making cycle.

As for mining and quarrying, we dig almost every conceivable kind of rock, coal and ore. Where the mineral lies near the surface we strip off the overburden so that with the same type of machine we can dig and load the more precious material below. Where it is buried deep underground we go right down after it, into lead mines, salt mines, iron ore mines or any other underground mine with space big enough to permit operation. Some machines are taken down in pieces and assembled below. We have several machines in a Newfoundland iron ore mine in a shaft which extends out under the ocean bed, more than a mile from shore and a half mile beneath the surface of the water.

Products of mine, field and forest go into industrial plants for processing and reprocessing. At each industrial step, when size or quantity warrants, there will be found a machine of our type to take over the handling. Apart from these operations, the maintenance departments of practically all large plants use such machines in quantities of one to dozens. DuPont, Dow Chemical, Eastman Kodak, the steel makers, the automobile producers and hundreds of others use our products. And finally, we must handle the enormous quantities of raw materials, as well as many of the industrially finished products, in the production of which we have already had a hand, that go into building and construction.

CONSTRUCTION

Construction today in this country is a world accounting for the expenditure, at current rate, of over 45 billions of dollars per year. Construction accounts for almost 60 percent of our sales volume.

In construction work power cranes and shovels demolish old structures, prepare sites to accommodate new structures and assist in the erection of the new structure themselves. They dig the earth for fills whenever ground levels must be raised and again they handle the vast quantities of supplies and materials incidental to any construction project. In many cases they remain with completed job for operation and maintenance.

HIGHWAY CONSTRUCTION

The recent and continued prominence of highway construction is due of course to the passage of the 1956 Highway Bill by the Congress, setting in motion the expenditure of \$33 billion of Federal money. According to McGraw-Hill, \$53 billion more of matching and independent state and local highway money will make for a potential total of \$88 billion, all supposed to be spent over a period of 13 years. Additional appropriations are expected later. There has been a great deal of talk about, and much enthusiastic evaluation of the shares of those who in any way serve the road building market. As highway construction and maintenance account for some 20% to 22% of our sales, we have been lately in the public eye as a company which will benefit greatly by the new program. It is quite true that we will, but to estimate the extent of this benefit we must put the highway program in its proper setting, namely its relation to overall construction volume. The prediction is that the portion attributable to road building will in the next four years increase by 54%, but that construction as a whole will rise by only 17%—probably on the conservative side.

A study made by the U. S. Bureau of Public Roads indicates when we pass \$5.8 billion of road building per year, about 3,000 additional machines will be needed for each \$1 billion annual increase. If projected figures are correct, by the end of 1960 an additional \$2.2 billion over the above \$5.8 billion will be spent. After discounting this somewhat it would seem that we might look for an additional \$5 million to \$6 million per year beginning in 1958 because of highways, reduced somewhat by the shrinkage in other construction brackets, such as residential starts. However the overall picture gives comforting assurance of continued regular average growth in total construction volume of at least 4% per year for the next 10 years—probably substantially greater—and, let me repeat, it is the total of construction volume not just road building that eventually determines our output in that market.

Now it must be remembered that we are dealers in large capital goods—heavy, very heavy machinery. We have then to bear one or two things in mind, such as:

BUSINESS CYCLES

Machines in the heavy class are very solidly constructed and if reasonably maintained will last a long time. Apart from radical design changes which might tend to obsolete given models of machines, they can be "made to do" for an extra season or two if in the owners mind there is any question as to the immediate business future. This is so much the case with us, both in construction and industrial use that our cyclical swings are usually rather pronounced. For example, we went down 18% from \$48.4 million of

sales in 1952 to \$39.5 million in 1953, down another 42% to \$22.9 million in 1954, and back up 52% to \$34.7 in 1955. In 1956 we hit \$46.3 million, an increase of some 33 1/3 % over the previous year. It is not an easy matter to cope with these wide variations on the downward side but they are in the very nature of our business. We have faced such swings for years and most important, have managed to avoid red ink in all but three of the last fifty seven years. Our only serious loss was in 1933 when we went down to seven percent of our capacity—on top of that the bank holiday—with bank debts and a debenture issue maturing. Anyone who hankers for the good old days can have those particular days and welcome to them.

These swings take place in the face of the steadiest kind of construction progression, as is shown in our table. Beginning the middle of last year there showed signs of what the McGraw-Hill Company calls a "Brief Breather in the Boom." I believe it is now referred to as a lull. We have had to review carefully our sales estimates for 1957 and are still hard at it trying to determine just how fast to run during the year. As to inventory one of our difficulties is that purchasewise we must still set our schedule 6 to 9 months in advance for many items. We draw heavily upon some of the only really scarce materials known today, heavy plates and structural shapes. This has resulted in some excess inventory, now being slowly reduced. It is all good stuff however and probably cannot be bought cheaper in the future. We handle our inventory upon the LIFO basis and feel well protected.

SPECIAL PURPOSE MACHINES

Another thing we must bear in mind is the "Other Fellow." The constant increase in construction and industrial activity means that eventually some given class of work becomes so large that a machine will be especially designed to do that particular job and may, to some extent and under certain conditions, replace our shovel or crane. The Bulldozer and the Scraper, particularly the one with the elevating loading feature, are examples. They do not eliminate us by any means but do sometimes affect our sales substantially. We have in the past created markets faster than we have lost them and are continually doing the things necessary to meet this changing picture—and it constantly changes.

We are now preparing to enter the particular purpose field on our own account with a machine we are certain has great promise, although we are not prepared to discuss the venture at this time. And we have in mind further moves in this direction.

RESEARCH AND DEVELOPMENT

In the meantime we work diligently to keep ourselves in the vanguard of our own Power Crane and Shovel Industry. Part of the reason for our comparatively low earnings for the last two or three years is that we subordinated almost everything to a program of concentrated product improvement. Instead of accumulating the new designs for convenient periodical change we cut them into production as soon as they were ready. Peacetime competition in our industry is rugged and we took no chances of being overtaken.

We are now in a position where we can proceed and are proceeding with more deliberation and with corresponding economy and eventually better inventory control.

In the past two years we have perfected three major contributions to the design of our type of product. One of these, a boom made of square and round tubular members instead of the customary angles, has reduced the boom weight by as much as 15 to 25 percent and of course has added the same amount to the payload. We expect good patent protection on this.

Another, "Joy Stick" operation with air control allows two levers to do the work of four and permits combinations of machine movements without shifting hands and with a minimum of effort.

The third, mounting the turntable on the truck by means of a ball-race provides advantages away over the older design using rollers and center gudgeons for taking up, down and lateral strains. Many lesser improvements need not be detailed here.

RESEARCH

Now in addition to our regular engineering force we have added a substantial new department devoted to applied research including the study of possible new materials, precision casting, forging and steel extrusion as applied to our product, and of new tools and methods of manufacture. Also included are new methods of excavating and material handling and machines therefor. While longer range in nature we are satisfied this type of endeavor will help safeguard our future and will more than justify the expense.

PLANT, CAPITAL EXPENDITURES, DEPRECIATION

Our current production of \$46 million (\$38 million average for 5 years) comes from a plant valued presently at about \$5.2 million net—roughly \$9,000 of product for each \$1,000 of plant. As I have indicated our purchase of engines and automotive equipment as well as our program of subcontracting, keeps the ratio of plant to sales well within bounds and makes for flexibility as well as economy.

We have recently acquired by rental, with option of purchase, the property formerly owned by The Magic Chef Co., a stove manufacturer, in our own City of Lorain. This adds about 75% to our floor space. About 1/4 of this will be used for shovel and crane production. The balance is des-

tined for the new product to which I referred a few minutes ago and, temporarily, for subtenants until full production of our new product is attained.

In the last 10 years we have paid out \$6.5 million in capital expenditures. In the same period depreciation has been \$3.3 million. Generally speaking we will average in capital additions twice our depreciation.

IMMEDIATE OUTLOOK

The year 1957 has started sideways. Our sales for the first quarter were roughly 1% ahead of those for the same period last year. The U. S. Departments of Commerce and Labor report construction put in place for the first four months a record \$12.5 billion—but only by 2% over last year same time, with physical volume falling behind. Private spending down, public up 11%. During the last several months we have shown a continuing small but definite improvement in the ratio of our sales to those of the industry—always a comforting statistic.

We are suffering from the general complaint of all businesses, namely the encroachment of cost increases into our margins. Our pension costs are up this year and our labor rates will rise under our union agreement. In connection with our new product, the year will have also to bear some expenses which cannot be entirely absorbed by the initial low volume of production and sales.

First quarter earnings, based on shares now outstanding, are 89 cents per share against \$1.48 a year ago. It must be remarked however that because of certain non recurring expenses and a change in setting up LIFO reserves, a better comparison would be 89 cents to \$1.36.

During the second quarter price increases are taking effect; gradually approaching a total of about 4% on our line.

We are not yet prepared to estimate with any degree of accuracy what this year will bring. Our economic counsel estimates and we agree, that volumewise we will continue in a sideway movement but we know that the climate in our particular industry is somewhat capricious. We believe though that, while probably a lesser year than last, 1957 should not compare too unfavorably with it. We will continue to design better machines, improve our efficiency, practice economy, step up our sales efforts and make all the hay possible under the weather conditions prevailing.

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Sinclair Finds Another New Oil Field

To those who live in a region known as Aguasay, in the State of Monagas, eastern Venezuela, the oil derrick is becoming a familiar sight.

Here, a Sinclair subsidiary — Venezuelan Petroleum Company — recently discovered another significant new field. Subsequent drilling has confirmed the importance of the discovery.

To oil statisticians, these derricks are towering evidence of Sinclair's successful program to increase its crude oil production and reserves —

a program that is being carried on in the United States, both onshore and offshore, in Canada, Venezuela and elsewhere.

SINCLAIR

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PROFITS FROM A BIG, COLD DRINK OF WATER

Condensation creates a vacuum that helps make the wheels go round in a steam turbine power plant. A practical way to condense the steam is to cool it with cold water, and just about the coldest water on the Atlantic Coast is found in Salem Harbor, Massachusetts. New England Electric's power station at Salem has deep-down intakes that swallow tons of icy water every minute, making full use of this natural advantage. But, then, that's only good business in a region where business is good; where flourishing prosperity makes constantly increasing demands on power facilities.



All this means good living and profit to New Englanders — and profit, too, for farsighted folks in other sections of the country who have investments in New England industry and business.

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